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The Commonwealth of Massachusetts.

FOURTH ANNUAL REPORT

OF

THE HOMESTEAD COMMISSION.

1916.



BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
32 DERNE STREET.

1917.

ACTS AND PUBLICATIONS RELATING TO HOMESTEAD AND PLANNING MOVEMENTS IN MASSACHUSETTS.

1909.

House 688 — Bill for the creation of a Homestead Commission.
Chapter 143, Acts of 1909 — Resolve for the appointment of a Homestead Commission to investigate and report.

1910.

House 198 — Adverse report of the first Homestead Commission.
House 258 — Favorable report of minority of the first Homestead Commission.
House 1687 — Bill, reported favorably by committee on public health and unfavorably by the House ways and means committee, to create permanent Homestead Commission and prescribe methods of procedure. Lost.

1911.

Senate 28, House 214, House 1326, House 742, Senate 550 — Bills to enable the Commonwealth to assist laboring people in acquiring homes.
Chapter 607 — The act creating the present Homestead Commission.
Chapter 84, Resolves — Creating the Metropolitan Plan Commission to make investigations into the matter of a metropolitan plan.

1912.

Labor Bulletin No. 88. — Homesteads for Workingmen. Bureau of Statistics. (Out of print.)
House 441 — Report of the Homestead Commission created by chapter 607, Acts of 1911.
House 442 — Bill accompanying report.
House 2339 — Adverse opinion of Supreme Court in regard to constitutionality of the proposition that the State aid laboring people in acquiring homes. 211 Mass. 624.
House 2344 — A bill to continue the Homestead Commission and define its duties.
Chapter 714 — House 2344 as finally passed.
House 1615 — Report of the Metropolitan Plan Commission.
Chapter 334 — An Act to regulate the use of buildings.

1913.

House 2000 — Report of the Homestead Commission.
Chapter 494 — An Act to provide for the establishment of local planning boards.
Chapter 595 — An Act further to enlarge and define the duties of the Homestead Commission.
Bulletin No. 1 of the Homestead Commission — What City Planning means.

1914.

Bulletin No. 2 — Information and Suggestions for City and Town Planning Boards.
First Annual Report of the Homestead Commission. 1913. (Public Document No. 103.) (Out of print.)
Chapter 283 — An Act to authorize the establishment of planning boards by towns having a population of less than ten thousand.
House 2164 — Report of Board of Education on agricultural instruction for families.
Chapter 100, Resolves — Commission on Uniform Method of Land Takings (Betterment Assessments).

1915.

Bulletin No. 3 — Teaching Agriculture to Families as a Relief for Unemployment and Congestion of Population.
Second Annual Report of the Homestead Commission. 1914. (Public Document No. 103.) (Out of print.)
Chapter 129 — Relating to the membership of the Homestead Commission.
Chapter 165 — Permitting town planning boards to be authorized to act as park commissioners.
Bulletin No. 4 — Proceedings of the Third Annual City and Town Planning Conference.
House 1851 — Report of Commission on Land Takings, Betterment Assessments.

1916.

Bulletin No. 5 — A Schedule of Civic Surveys.
Third Annual Report of the Homestead Commission. 1915. (Public Document No. 103.)
Chapter 185, General Acts — An Act to authorize cities to maintain schools of agriculture and horticulture.
Chapter 190, General Acts — An Act to authorize cities to establish boards of survey.
Massachusetts Federation of Planning Boards: —
Bulletin No. 1 — Part 1, The Functions of Massachusetts Planning Boards; Part 2, The Official Plan.
Bulletin No. 2 — Town Planning and Present Legislation in Massachusetts.
Bulletin No. 3 — Future Planning Legislation in Massachusetts.
House 1750 — Supplementary report of Commission on Land Takings, Betterment Assessments and Building Lines.

The Commonwealth of Massachusetts.

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The Commonwealth of Massachusetts.

BOSTON, December, 1916.

To the Honorable Senate and House of Representatives.

In compliance with the provisions of chapter 714 of the Acts of 1912, and chapters 494 and 595 of the Acts of 1913, the Homestead Commission, created by chapter 607 of the Acts of 1911, has the honor to submit the accompanying report and bills.

CHARLES F. GETTEMY, *Chairman.*

AUGUSTUS L. THORNDIKE.

KENYON L. BUTTERFIELD.

GEORGE CHANDLER WHIPPLE.

EVA W. WHITE.

WARREN DUNHAM FOSTER.

HENRY STERLING, *Secretary.*

ARTHUR C. COMEY.

CORNELIUS A. PARKER.

REPORT OF THE HOMESTEAD COMMISSION.

The Recommendation, and Some Reasons for it.

The Homestead Commission renews its recommendation of last year for an appropriation sufficient to allow an experiment or demonstration to be made in providing wholesome, low-cost homesteads, or "small houses and plots of ground,"¹ for "mechanics, factory employees, laborers and others in the suburbs of cities and towns,"¹ and accompanies the bill with detailed plans.

The principal considerations which induce the Commission to make this recommendation are —

There are not enough wholesome, low-cost dwellings.

There is no prospect that present methods will ever supply enough unless the State encourages their construction.

Therefore the State should experiment to learn whether it is possible to build wholesome dwellings within the means of low-paid workers.

Up to the time of the present great war every progressive country, without loss and generally without expense to the taxpayers, was doing something to promote the construction of dwellings for workers. Germany had built and financially aided in the building of many thousands of such dwellings. Since the war began England has enormously increased her expenditures for this purpose. New Zealand's activities, the most extensive of any, show a profit to the public treasury of nearly half a million dollars per year.

History of the Bill. — The original instructions given to this Commission were to draw a bill under which, "with the assistance of the Commonwealth, homesteads, or small houses and plots of ground, may be acquired by mechanics, factory employees, laborers, and others in the suburbs of cities and towns."¹ Such a bill² was submitted by the Homestead Com-

¹ Chapter 607, Acts of 1911.

² House, 441 and 442, 1912.

mission to the General Court of 1912. Its principal provision was that the uncalled-for savings banks deposits in the State treasury might be used for the purpose proposed. The constitutionality of such use of these funds being questioned, queries were submitted to the Supreme Court on that point, which body in a sweeping and unanimous opinion¹ declared that the use of any funds over which the State had control, for the purpose of aiding citizens to acquire homes, was contrary to the provisions of the Constitution.

Since that time a constitutional amendment² permitting the taking of land for such a purpose was passed by overwhelming majorities in both branches of the Legislature in 1914 and 1915, and ratified by the voters by nearly a three to one majority in 1915. In consideration of this removal of the constitutional obstacles to legislation, the Homestead Commission in 1916 felt it to be its duty to revert to the instructions given to it by the Legislature in 1911,³ and to report to the General Court a new bill⁴ providing for a moderate, conservative, carefully conducted experiment, or demonstration, in order that experience might show what may properly be done, with safety to the Commonwealth and benefit to the public, to aid workers seeking to acquire homes. In support of this bill, which called for an appropriation of \$50,000, the Homestead Commission presented to committees, somewhat in detail, information regarding the location and cost of certain pieces of land suitable and available for the purpose, and photographs, plans, specifications and cost of certain houses already built of the kind needed. Nevertheless, the passage of the bill was strongly opposed in both houses, the main contention urged against it being that no detailed plans accompanied the recommendation; and although it passed the lower House by a vote of 113 yeas and 86 nays, in the Senate it was defeated by a tie vote, 19 to 19. In renewing its recommendation of last year, therefore, the Com-

¹ Opinion of the Justices, 211 Mass. 624; House, 2339, 1912.

² The general court shall have power to authorize the commonwealth to take land and to hold, improve, sub-divide, build upon and sell the same, for the purpose of relieving congestion of population and providing homes for citizens: *provided, however*, that this amendment shall not be deemed to authorize the sale of such land or buildings at less than the cost thereof. (Constitutional Amendment ratified Nov. 2, 1915, 284,568 to 95,148. Vote in the General Court: 1915, Senate, 28 yeas, 7 nays; House, 193 yeas, 14 nays; 1914, Senate, 33 yeas, 3 nays; House (April 10), 182 to 0; (May 29), 191 to 2.)

³ Chapter 607, Acts of 1911.

⁴ House, 513, 1916.

mission deems it essential to submit with this year's bill carefully drawn plans for definite, concrete projects, in specified locations, giving as full details as is possible with the time and funds at its disposal.

Previous reports¹ of the Commission have set forth with much detail the shortage and great need of good homes within the means of the low-paid workers of the Commonwealth; the wretched and repulsive conditions in which thousands of families live; the morally debasing and physically and mentally deteriorating tendency of such conditions; their injurious effects on the general public health and well-being; the facilities they offer for the spread of disease, particularly tuberculosis; the excessive loss of life among infants and young children; the undue amount of delinquency and moral and mental deficiency and lessened efficiency among dwellers in such houses; the lowered standard of citizenship which results from these causes; the constantly increasing tenement-house population; the increasing flow of people from country to city and its ill effects in relatively decreasing the supply of food with increasing demand; the effects in congestion of population and unemployment of the constant influx from the rural districts with no corresponding flow of people away from the cities. The reports also describe the measures taken by other countries to alleviate these conditions, and the results of such activities, showing that Massachusetts and the United States are far behind all other progressive countries of the world in efforts to deal with this subject.

General Statement regarding Plans.

In order to work out its plans the Commission desired to select one tract of land within reasonable walking distance of the industries of a manufacturing city, to be divided into plots to furnish room for (a) house and small garden, accommodating about eight families to the acre; (b) another tract within a 5-cent car ride, to be divided into plots varying from one-eighth to half an acre each; and (c) a third more distant tract to be divided into plots varying in size from one-half acre to 5 acres. It was found inadvisable to attempt to carry

¹ Legislative reports: House, 441, 442, 1912; House, 2000, 1913; first, second, third annual reports 1913, 1914 and 1915 (Public Document No. 103).

out the plans for the third project, largely because of lack of funds. The results of the Commission's work on the first two projects are presented herewith.

MINIMUM REQUIREMENTS FOR WHOLESOME HOMESTEADS.

The Commission approves the statement that the ideal homestead is the single family house, preferably detached, with plot of ground. For such a home, what are the minimum requirements?

To answer this question it is necessary, first, to determine who most need such homes, how much they can pay, and what are the actual necessities for wholesome living.

Who most need Such Homes. — There were 411,115 adult males employed in 1914 in the manufacturing industries of Massachusetts, 258,133, or 63 per cent., working for less than \$15 per week. Of these, 98,330, or 24 per cent. of the whole, received less than \$10 per week.¹ Probably a majority of these men are heads of families. Nearly all live in a few rooms in low-priced tenements, wholesome or unwholesome. Every consideration of public health, morals, well-being and progress and stability of civilization demands that the children of these men be brought up in wholesome, healthful homes. Yet almost the only dwellings available to them are the tenements, into which they are flocking in increasing proportions.² The environment of the cheap tenement tends toward everything that is undesirable, but only a very few of the tens of thousands of families housed in such tenements can ever escape from them without aid. This is the class for whom provision should be made.

Amount they can pay. — All authorities agree that the cost for rent should not exceed one-quarter the wages of the head of the household. Inasmuch as the income of the head of the families under consideration seldom exceeds \$60 per month, the utmost they should pay is \$15 per month for shelter. This appears to be too high for those receiving less than \$15

¹ Statistics of Manufactures, Bureau of Statistics.

² Third annual report, Homestead Commission, pp. 14-17.

per week, but it should be remembered that this Commission believes that there will be a considerable offset from the garden, for which provision should in every case be made. This is 9 per cent. per year on a \$2,000 homestead. A gross return of 9 per cent. on such an investment appears to be as low as is safe, whether property is sold or rented. Can wholesome dwelling places be supplied within that figure?

Actual Necessities for Wholesome Living. — Assuming an ordinary family, — parents and children of both sexes, — the house should have at least —

Living room, kitchen, 3 bedrooms, closets, cellar.

Cooking, heating, lighting, washing, toilet and bathing facilities.

Provision for drainage, sewage and garbage disposal.

There need not be a heating system, but provision should be made for stoves, other than cooking range, in places needed, and construction may well allow for a future heating system. The structure should be made as fire-resisting as possible with due consideration to cost.

The words of the act relating to homesteads preclude consideration of tenement houses, but there is one form of construction known as "semi-detached," more commonly hereabouts called a "double" house, which should receive some attention. In this case two houses are joined by a vertical party wall. Each house is complete in itself, and entirely separate from the other except for the party wall. Some examples of this method are to be seen in New England, but it seems not to have been greatly favored. It is freely used abroad, however, in the various better-housing enterprises. Its manifest advantage over the single house is economy in construction and in land. The principal objection to it is that it is a step away from the ideal single-family home toward the multiple dwelling. Where sufficient land is available the social advantages of houses entirely separate probably outweigh the economies effected by semi-detached construction. Some illustrations of semi-detached houses are included in the plans submitted.

Land enough for a garden, small or large, should go with each house. Sunlight and fresh air, plenty of both, are as essential to good health, happiness and general well-being as are food, clothing and shelter. To secure them there must be space — a “plot of ground” — around the home. Its proper and profitable use should be insisted upon. Competent instruction and supervision should be provided.

Some Benefits of Such Homes. — We have thus summarized what seem to be the minimum requirements for such a homestead. The social and individual benefits to be derived are beyond calculation. They have been so fully considered in previous publications of this Commission that extended reference to them here is unnecessary. It may be well, however, briefly to restate some of them: —

A saving of lives, particularly of children and infants.

Better health, public and individual.

Less opportunity for the contraction and spread of tuberculosis and other communicable diseases.

Wholesome and healthful environment.

Space for play.

Infinite increase in the chances for joy in living, particularly for children.

A tendency to inspire and elevate, physically, mentally, morally, rather than to depress, dishearten and deteriorate.

Opportunities for an enjoyable and profitable employment that leads to the most fundamental of all vocations and gives rich returns for spare-time work both for parents and children.

THE POSSIBILITY OF PROVIDING SUCH HOMES.

The question recurs, Can such homesteads be brought within the means of low-wage workers? The problem is to supply a homestead with these minimum requirements for \$2,000.

Is Suitable Land Available? — The first necessity is suitable land. Can it be secured at a price low enough to justify its use for such dwellings? Obviously not in the high-priced, central portions of cities. The homes must be located in the

suburbs, either within or without the boundaries, as circumstances may determine. Most cities have large tracts of undeveloped land within their limits, enough for immediate use and to last for some time in the future. Cambridge, Chelsea, Lawrence and Somerville are exceptions, being almost completely built over, but near Lawrence there is much spare land. Boston has over 7,000 acres of unoccupied territory, but much of it within a 5-cent fare radius is held at too high a price to permit of its being used in this way. In or near the rest of the cities there appears to be plenty of available land at not too high cost. Inquiry easily disclosed over 160 acres of land, in four tracts, now on the market, within or close to Lawrence, at \$200, \$1,306.80 and \$1,197.90 per acre; about 445 acres in five tracts in or near New Bedford at prices ranging from \$100 per acre to \$450 per lot of about 5,000 square feet, \$3,920.40 per acre; one tract of more than 500 acres within a 5-cent fare of Fall River at \$20,000, about \$40 per acre; at Lowell, 66 acres for \$3,000, or \$45.45 per acre, 55 acres for \$26,000, or \$472.72 per acre, 40 lots of 5,500 square feet each for 1 cent per foot (\$435.60 per acre), 2,000,000 square feet, or 45.91 acres, at \$653.40 per acre, 33 acres for \$1,500, or \$45.45 per acre, 212 acres for \$10,000, or \$47.17 per acre. These are tracts upon the market in the summer of 1916 for immediate sale. Some of them are in fair condition for immediate building, but others would require much labor to fit them for use. All are within or close to the 5-cent fare radius. They represent only a small proportion of the tracts available, and mention is made of them here only to show that in most localities land is abundant at moderate prices.

This indicates that suitable suburban land can be acquired in or near to many cities at a cost ranging from \$40 up to about \$700 per acre. Subdivided into 8 lots (nearly 5,000 feet per lot), there results a cost of from \$5 to about \$90 per lot. The expense for survey, bounds, preparation of soil, sewerage, water supply, roadways, curbs, walks, trees, etc., would be about \$175 per lot¹ in the urban development. In more distant developments the cost would be much lower, as

¹ See page 55 for Lowell estimates.

a less expensive type of improvement would be appropriate, probably \$80¹ or less.

For a development within city limits, then, there remains a balance not to exceed \$1,735 for the construction cost of the house itself.

Perhaps as good a way as any to show what can be done for that sum is to give a few illustrations of what actually has been done in recent years in this country at about that figure. Various groups in different places have experimented on the problem of supplying wholesome houses for the poor at prices within their means. Some of the results of their work are herewith offered for consideration. No great amount of material is available for comparison, as most enterprises of this kind by employers or others have produced tenements, houses in rows, or houses either far above or far below the requirements and cost of \$2,000, deemed by this Commission most nearly to meet the present needs in Massachusetts. Abundant material from other countries could be introduced, but conditions, methods of building, requirements and customs abroad differ so greatly from ours that details of construction appear to have but little value here. The lowest cost for government-aided cottages with plot of ground in Ireland is given as \$750. In eastern European countries before the war the cost for such dwellings ran lower. In New Zealand the construction cost of State-aided dwellings was fixed at £300, which amount was gradually increased until in 1914 the total value of a State-aided worker's dwelling and lot must not exceed £750. "Workers' dwellings are now being erected on rural allotments of about 5 acres, with the maximum unimproved value of land of £250; this allows £500 (\$2,500) for the cost of any building erected."² In Queensland, Australia, it reaches a maximum of rather more than \$4,800.

In presenting these illustrations of actual recent construction the Homestead Commission is not unmindful of rapidly increasing prices. It would be unwise and probably untrue to say that a house which cost a certain sum in 1915 or 1916 can

¹ For example, at Billerica the approximate cost per gross acre would be for survey and bounds, \$17; preparation of soil, \$42; sewers with cesspools, \$164; water pipe, \$18; roadways, \$136; walks, \$35; trees, \$12; total, \$424.

² New Zealand Official Year Book, 1915.

be built for the same or approximately the same amount in 1917. Yet it is to be remembered that the higher prices go, the greater is the need of the poor. Nor can any important decrease in prices be expected in the near future. It would seem to be urgent, therefore, to proceed with an experiment at once, in order to meet the present need. Should declining prices later result in lower costs to build, a broader and safer work will be made possible by the experience gained under high prices.

Throughout this report wood construction has been considered almost exclusively, largely because that is the prevailing type in this locality. The Commission is aware that brick or other forms of durable construction may in the long run be more economical, and some study has been made of such methods as the various forms of concrete, hollow tile and stucco. We believe that several materials should be represented in this experiment, and that careful note should be made of results, so that future years might determine which is the most suitable and economical.

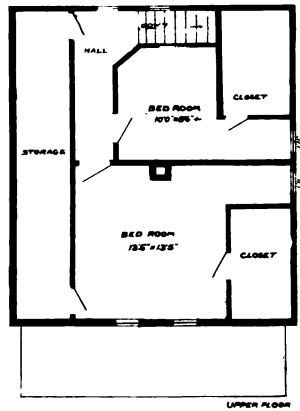
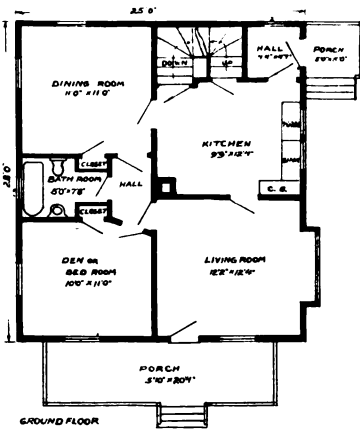
ILLUSTRATIONS OF ACTUAL RECENT LOW-COST CONSTRUCTION.

Billerica Garden Suburb. — In North Billerica, where an attempt to produce a garden suburb somewhat similar to those of England and Germany is meeting with considerable success, among the houses built one finished late in the year 1916 is chosen as an illustration of what has actually been recently successfully accomplished in the construction of a low-cost home. This house, photograph and floor plans of which appear on page 17, is of semi-bungalow type, 25 by 28 feet, with piazza 20 by 7 feet. It contains six rooms and bath. The rooms are of ample size and conveniently arranged. Special provision is made for storage room and closet space, with place for refrigerator and for hanging outdoor clothing in back entry. The cellarway has a number of shelves to save steps in doing the necessary work. The cellar walls are of concrete, with four window openings giving ample light in all parts. The building is of frame construction, triple studding at the corners and double studding at all openings; sides are covered with matched boards, a layer of good building paper

and cypress clapboards; roof closely boarded and covered with asphalt shingles with slate chip surface laid $4\frac{1}{2}$ inches to the weather. The inside is finished in North Carolina pine with hard pine flooring of good grade, cypress five-panel doors, front door of the craftsman type of quartered oak; outside painted with three coats of lead and oil and inside finished with two coats of shellac and one of spar varnish; kitchen and bathroom have three coats of good wall paint. Three fixtures of modern type are in the bathroom, and the kitchen has set tubs, sink and necessary cabinet work. The house is lighted throughout with electricity, triple "showers" in living room and dining room and two fixtures in the kitchen. It has a furnace of adequate capacity to furnish necessary heat without forcing. It is of attractive design, homelike in appearance and of comparatively low cost, as it was built for a little over \$1,800.



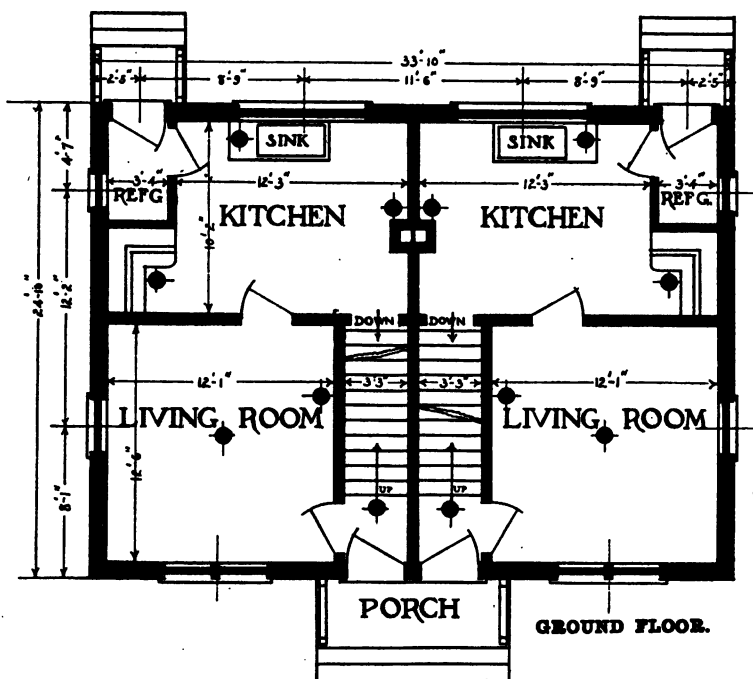
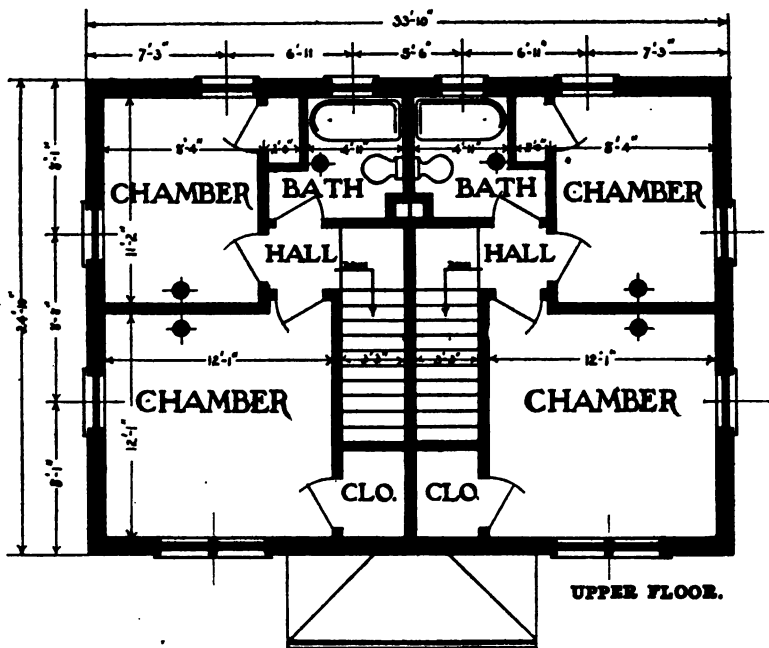
Six-room semi-bungalow, Billerica Garden Suburb, 1916. Construction cost \$1,800.



Floor plans of above.

Salem Model Low-cost Houses. — In Salem, after the fire of 1912, the Rebuilding Trust constructed a number of houses which fall within the limits considered here. Semi-detached or double houses of brick construction, slate roof, four rooms and bath to each house, were offered for sale at \$3,582.16, or \$1,791.08 per house. The first two photographs, A and A', page 21, give different views of one of these houses. Plan 1, page 20, shows the floor plans for the first and second floors.

The exterior walls are 8-inch brick, strapped internally; roofs of sea-green slate fastened with copper nails, flashed with copper and lead; sides and faces of dormers, stucco applied to wire lath on wood frame; foundations block granite, exterior doorsills also granite; window sills of sloping brick with copper pan under; party wall brickwork between studs, treatment carried to underside of roof; chimney brick with two 9 by 9 inch flues with lining. Each of the two houses has a living room, kitchen with pantry alcove, back entry with refrigerator space and stairs to second floor and cellar on the lower floor. The second-floor plan shows in each of the two houses two chambers, small hall and bathroom. All rooms are furred on the exterior walls, lathed and plastered. The under floors are spruce with finished floors of rift hard pine everywhere except in the kitchens, where they are maple. All finished floors are matched and blind-nailed and are laid over building paper. Interior finish North Carolina pine, stained and shellacked. Floors are oiled. Outside doors pine, inside doors cypress. No screens are included. Dressers in the kitchen consist of the counter and four shelves, hanging strips, etc. Picture moulding put up in the living rooms. Cellar has an earth floor carefully smoothed and rolled and furnished with coal bins, space for heater, etc. Hardware of brass and porcelain of the strongest and most substantial type. Plumbing fixtures include bathtub of enameled iron and water-closet of syphon-action type, iron sinks in kitchens, and 30-gallon hot-water copper tanks on city pressure with relief valves. Outside finish, cypress, except in connection with porch floors, which are rift hard pine, oiled. Painting of lead and oil for all outside work except porch floors and copper. Inside work includes all sash treatment, etc. Plaster walls in

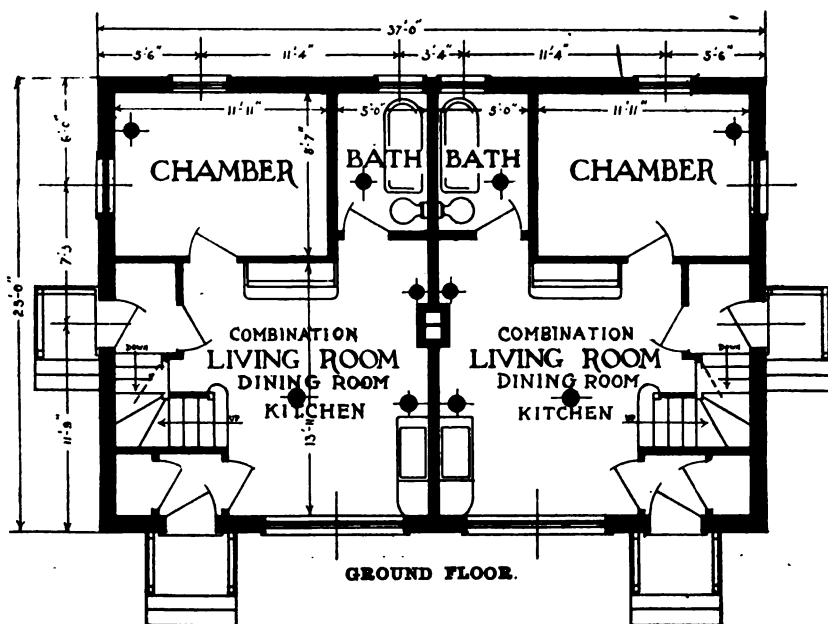
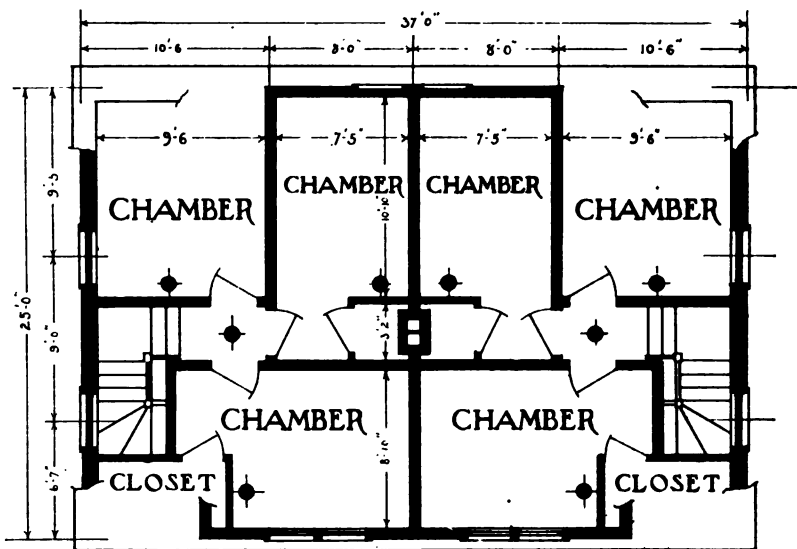


Plan 1. — Floor plans, Salem four-room, semi-detached houses, A and A .



Kilham & Hopkins.

A and A'. — Two views of four-room, semi-detached houses, Salem. Total cost \$3,582.16, or \$1,791.08 per house. Floor plans on opposite page.



Plan 2. — Floor plans, Salem five-room, semi-detached houses, B and B'.



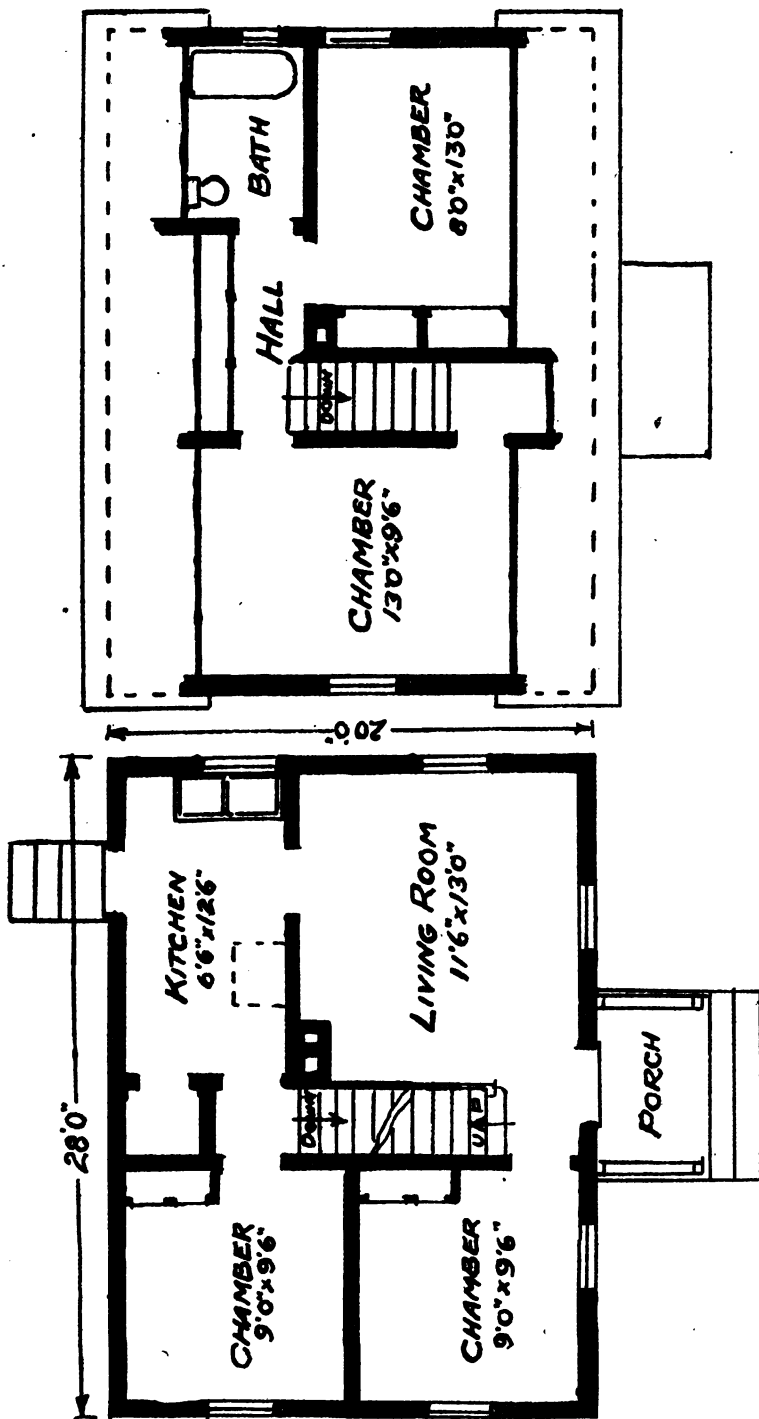
Kilham & Hopkins.

B and B'. — Two views of five-room, semi-detached houses, Salem. Total cost \$3,886.62, or \$1,943.31 per house.



Mann & MacNeille.

**C and C'. — Six-room houses at Kistler, Pa., \$1,000 to \$1,600.
Floor plans on opposite page.**



Plan 3. — Floor plans of C and C'.

kitchen, hall and stairways sized and finished in oil paint, three-coat work. The houses are lighted by both electricity and gas, and gas connections are provided in kitchens for gas ranges.

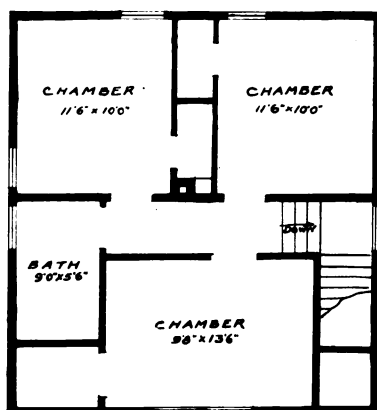
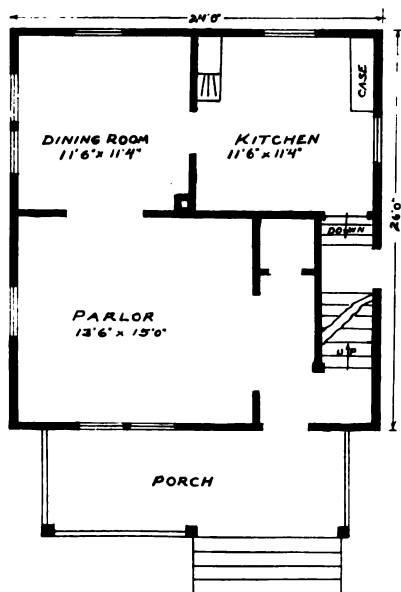
Five-room double or semi-detached houses were also built for rent at \$15 or for sale at \$3,886.62, or \$1,943.31 per house, B and B', Plan 2, pages 22, 23. Each of the two houses contains on first floor a large kitchen to be used also as living room, with open stairs to the second floor, room to be used as parlor or bedroom, bathroom, vestibule with coat closet, passageway to the back door, with space for refrigerator. Second floor included three chambers, passageway, general closet and closets for two of the chambers. Specifications same as for A and A'. Dormers occur, however, only in connection with B and B'.

Some Pennsylvania Low-cost Houses. — In Kistler, Pa., near Altoona, six-room houses were built in 1915 at an estimated cost of \$1,000 each. This amount, however, had subsequently to be advanced to about \$1,600. About 100 houses have been built, substantially after this plan. They are one and one-half stories in height, cellar walls of field stone, frame shingled walls above, durable ruberoid roof, double-hung windows, bath, water-closet, kitchen sink, set tubs, water and sewer connection. Wiring was included, also small furnace. The lot was 40 by 100 feet, valued at \$200. The houses rent for \$10 per month, but it is understood that most of them were sold. This arrangement of floor plan proved to be very attractive from its practical character. Views of three of the houses are shown in the photographs C and C', and floor plans with data are shown in Plan 3.

A Wisconsin Low-cost House Undertaking. — Early in 1916 the number of employees in the principal factories of Kenosha, Wis., increased more than 3,000, representing 1,500 families. In the same period only 245 houses were constructed. A Kenosha Homes Company was organized and it proposes to build at least 400 low-cost homes, for sale or rent. The cost of the lots will average about \$350 to \$400, and the houses to



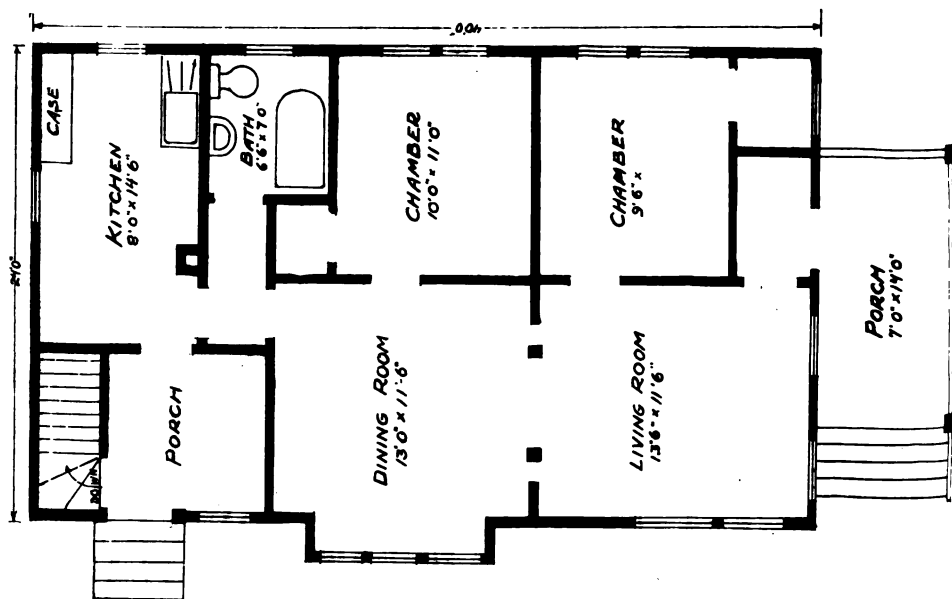
D. — Six-room Kenosha house, 1916. Construction cost \$1,725.



Plan 4. — Floor plan of above.



E. — Five-room Kenosha house, 1916. Construction cost \$1,700.



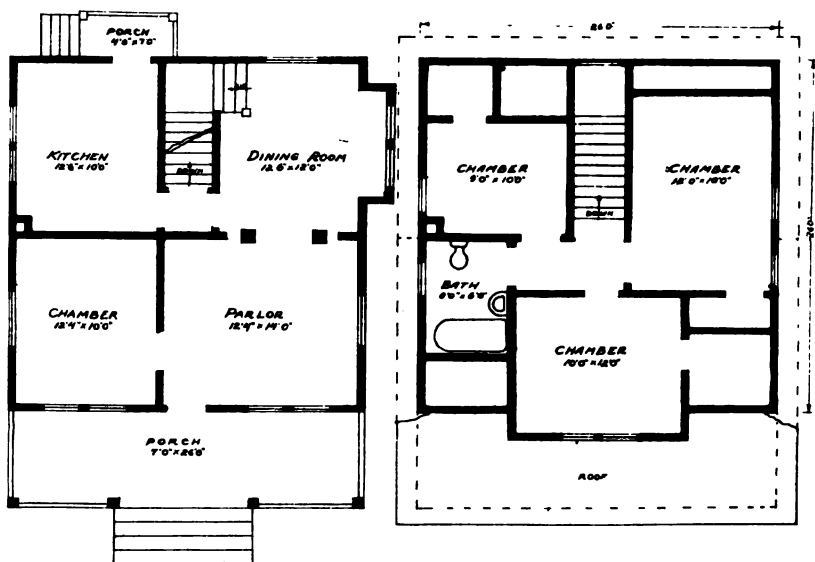
Plan 5. — Floor plan of above.



F. — Five-room Kenosha house, 1916. Construction cost \$1,700.



**G. — Seven-room house, 1916. Construction cost \$1,800.
Floor plans on page 30.**



Plan 7. — Floor plans of seven-room, \$1,800 house, G, shown on page 29.

be built, from \$1,800 to \$2,000, mostly single-family detached houses. D, E, F, G, with Plans 4, 5, 7, present types of a group of these houses built in Kenosha in 1916.

The first, D, is a story and a half, six-room house, cost \$1,725 to build. Cellar with cement block walls, wood frame house with stucco covering for first floor, shingles for walls above and for roof surfaces. The windows are double hung. Rooms finished in plaster with wood floors. Chimney brick single 8 by 8 flue. Plumbing includes bath, water-closet and kitchen sink.

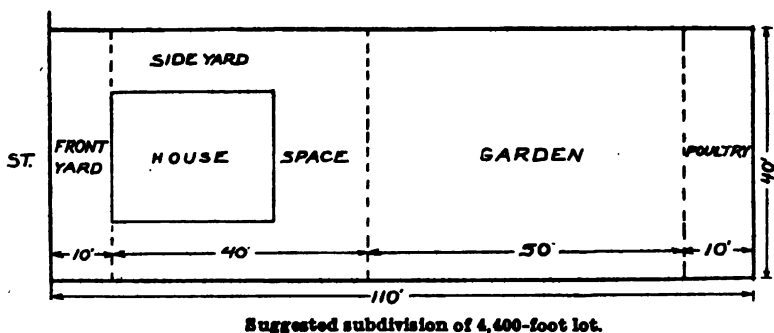
E, costing \$1,700 to construct, is a one-story, pitched-roof, five-room house; living room 11 feet 6 inches by 13 feet 6 inches, dining room 11 feet 6 inches by 13 feet, kitchen 14 feet 6 inches by 8 feet, two chambers 11 feet by 10 feet and 11 feet by 9 feet 6 inches, front and back porch, bath.

F is a house of five rooms and bath, cost \$1,700; ground measurements 24 feet by 40 feet, two bedrooms each 10 feet by 11 feet 9 inches, kitchen 9 feet 9 inches by 10 feet 9 inches, dining room 10 feet 9 inches by 13 feet 6 inches, living room 11 feet 3 inches by 16 feet 3 inches. The lot unimproved \$308, improvements \$494.94, total cost \$2,502.94.

G, \$1,800. Seven-room house with bath, parlor, dining room, kitchen and chamber on the first floor, 3 chambers on the second floor, ample front porch and small back porch.

GARDENS.

Of what value — communal, individual, financial — is the small garden with the homestead? Obviously not of great financial value if ignorance and neglect prevail. From a monetary standpoint it would be useless and wasteful to place a number of families from the tenements, with little or no knowledge of garden management, in such homesteads as are being considered, unless care were taken to secure the fullest and most profitable use of the privileges offered, by providing competent instruction, supervision, and possibly some slight compulsion. Nevertheless, even from poorly kept gar-



dens great benefits are to be gained in health, happiness, success, efficiency. These are not the products of closely packed tenements or noisy, crowded streets, but they are rather to be found where ample sunlight, fresh air and space to play and to work prevail. The communal benefit of rearing children in such an environment is beyond estimate. Caring for a garden affords the best possible mental and physical tonic.

The financial return from a garden depends upon so many uncertain factors that while in some instances its value is very great, in others the pecuniary reward for labor expended is less than nothing at all. The character of the cultivator, his industry, intelligence and knowledge of the work, the kind and quality of the soil, the crops selected, the quality of the seeds, the vagaries of the weather, all have a direct and important bearing on the amount and value of the product. There are so many uncertainties that it may be unsafe to

make estimates, but it would seem to be possible to ascertain what might be a minimum *average* output for a small garden properly cultivated. There need not be any total failures. "The fundamentals of success in home gardening," says Prof. H. F. Thompson,¹ are: "First, good seed; second, well-prepared soil; third, proper planting; fourth, thorough tillage; and fifth, an acquaintance with the nature and habits of the plants which are grown. *Thus fortified, the home garden is a sure success.*"

In the division of an acre for the use of eight families, a layout of 40 feet frontage and 110 feet depth, or figures closely approximating these, would frequently be found. Such a lot lends itself to convenient subdivision, as follows: Set-back, or front yard, 10 feet; house space, 40 feet, which would allow considerable room for outdoor work, play, clothes-drying, flowers, etc.; 50 feet of the depth of the lot, or 2,000 square feet, rather less than one-twentieth of an acre, for garden; 10 feet for poultry yard.

Probably no one with practical knowledge will deny that intensive, intelligent cultivation should produce an average of \$25 worth of vegetables per year from such a garden plot. Some experts will say more. School gardens and cultivated vacant city lots are much more numerous than is realized by the average citizen, and their number is of late increasing rapidly. Statements and reports from many of them justify these figures. Good seasons with good management would bring much more. Where the keeping of poultry is permissible add \$11 for return from the hens, an exceedingly low estimate when waste from the garden and kitchen is utilized. This is \$36 per year, or \$3 per month offset from the \$15 per month payment on the homestead. This appears to be a reasonable minimum average to expect from such gardens. How much more might be gained by superior skill and application, experience alone can determine. Following is a record for the year 1916 of expenses and returns for a plot of 2,000 square feet of land in the residential portion of Somerville: —

¹ Transactions of the Massachusetts Horticultural Society, 1915, Part I., p. 68.

<i>Expense.</i>	
Seeds,	\$3 65
Manure,	3 00
Lettuce plants,	40
Beans,	15
	<hr/>
	\$7 20
<i>Returns.</i>	
Tomatoes,	\$11 05
Berries,	2 55
Lettuce,	2 40
Parsnips,	2 15
Celery,	2 00
Corn,	1 95
Beans,	1 70
Green peas,	1 50
Onions,	85
Asparagus,	75
Salsify,	55
Rhubarb,	40
Spinach,	40
Carrots,	35
Radishes,	30
Leeks,	25
Beets,	15
Peppers,	15
Cabbage,	10
Horseradish,	10
Squash,	05
	<hr/>
Value of garden truck,	\$29 70
Cost of seeds, etc.,	7 20
	<hr/>
Net return,	\$22 50

This product could have been greatly increased by more intensive cultivation. Accounts of instances where much larger returns have been obtained are not uncommon. The Homestead Commission has some of these in its office. There is good reason to expect that the figures set forth would often be exceeded by considerable amounts; but this sum, added to the benefits arising from better health, happiness, thrift, increased knowledge and experience in actually doing things, should make such homes exceedingly attractive and beneficial.

TERMS.

The terms upon which purchasers may acquire homesteads should receive careful consideration. One first point seems clear, — no title deeds should pass until at least 20 per cent. of the purchase price has been paid. It is true that the rigid enforcement of a demand for so much cash in advance of possession might in some measure tend to defeat the purpose of homestead legislation, which is to make it possible for low-paid wage earners to acquire homes. Many such workers may not have, and may not be able to obtain, the necessary sum. It would seem that when circumstances warrant it, possession might be given upon a smaller first payment, the title to pass when the payments amount to 20 per cent. of the principal. While all the amortization tables given below begin with an initial payment amounting only to the sum to be required monthly, it is not to be assumed that a policy of allowing possession of property without a reasonable first payment is being proposed, but some latitude should be exercised in this regard. Workingmen with large families and small pay are in greatest need, and assistance to such would be productive of the largest communal benefits. It may be much wiser to assist such a family to a home in preference to a smaller family with more cash and larger income, even if no initial payment greater than the first month's installment could be made, provided character is good and there is reasonable financial responsibility. The point always to be kept in mind is the necessity, if any great good is to be accomplished, of reaching those whose needs are greatest. At the beginning of this experiment, however, it would probably be deemed wise to select those who had shown the ability to accumulate something toward the cost of a homestead. Until the matter has been tested out so that the management in charge is sure of its ground, it will doubtless be wise to adhere to a substantial initial payment.

Should the General Court authorize the Homestead Commission to proceed with the experiment or demonstration recommended in this report, thorough publicity of details and plans would be sought in the community where land is ac-

quired, with convenient opportunities for prospective participants to make application for a home. Selections from applicants should be governed by the foregoing considerations. It is well to note here that any operations undertaken by the Homestead Commission would be subject to the constitutional limitation "to provide homes for citizens."¹ Building should proceed with due regard to actual demand by suitable applicants, and should be behind rather than ahead of the demand, so that a waiting list might be established. With such a list there should be no difficulty or delay in an owner disposing of his holding in case of necessity. It might well be required that the seller accept pay for his equity in installments similar to those by which he acquired it.

Restrictions. — The property should be protected by an agreement that in case of sale the homestead shall first be offered to the Commission, or be sold through it or under its control, at a fair appraisal of value made at the time of sale, or at a price to be reached by mutual understanding. Such a requirement would prevent absentee ownership and also the ownership by any persons of more than one house. It should, however, entail no obligation to purchase either on the Commonwealth or Commission.

Some of the restrictions on the use of the land and buildings which should be provided for are as follows: Proper upkeep of houses, proper care and use of the lot and building as to health, morals, safety, freedom from noise, odors and appearance offensive to the general sense of the community, and the necessity for intensive cultivation of the land, since it is one of the purposes of the experiment to encourage such a use of the land as shall be educational, and tend in some degree to reduce the net annual cost of his house to its owner.

Paying off the Debt. — To give some idea of details of payments, number of years required to complete them, and the amounts paid and balance due at any given time, the following three amortization tables have been prepared, showing: First, on a \$2,000 house, payments of \$15 per month, to be

¹ Chapter 607, Acts of 1911.

applied to interest at 5 per cent., taxes \$20 per \$1,000, insurance \$6 per year, balance on principal; repairs and water rates left to the buyer. The table shows the amounts paid in, the accumulated interest due, the proportion of taxes and insurance, the balance to be applied to principal, and the balance of principal left unpaid, at the end of each three months' period, payments monthly in advance, first payment \$15. The debt would be extinguished in twenty-seven years, seven months. This may seem to be a long term, but it should be borne in mind that the people sought to be reached can make only small payments, and many of them pay relatively higher rents for poor or unwholesome dwellings for a greater number of years and at the end have nothing whatever to show for their money. Opportunity to make larger payments would always be open.

TABLE 1. — *Amortization Table showing the Paying Off of \$2,000 (Payments \$15 per Month, to cover 5 Per Cent. Interest, \$40 Taxes, \$6 Insurance).*

	Amount paid in.	Interest.	Taxes and Insurance.	Paid on Principal.	Principal left unpaid.
<i>First Year.</i>					
First quarter,	\$45 00	\$25 00	\$11 50	\$8 50	\$1,991 50
Second quarter,	45 00	24 89	11 50	8 61	1,982 89
Third quarter,	45 00	24 79	11 50	8 71	1,974 18
Fourth quarter,	45 00	24 68	11 50	8 82	1,965 36
<i>Second Year.</i>					
First quarter,	\$45 00	\$24 57	\$11 50	\$8 93	\$1,956 43
Second quarter,	45 00	24 46	11 50	9 04	1,947 39
Third quarter,	45 00	24 34	11 50	9 16	1,938 23
Fourth quarter,	45 00	24 23	11 50	9 27	1,928 96
<i>Third Year.</i>					
First quarter,	\$45 00	\$24 11	\$11 50	\$9 39	\$1,919 57
Second quarter,	45 00	23 99	11 50	9 51	1,910 06
Third quarter,	45 00	23 88	11 50	9 63	1,900 44
Fourth quarter,	45 00	23 76	11 50	9 74	1,890 70
<i>Fourth Year.</i>					
First quarter,	\$45 00	\$23 63	\$11 50	\$9 87	\$1,880 83
Second quarter,	45 00	23 51	11 50	9 99	1,870 84
Third quarter,	45 00	23 39	11 50	10 11	1,860 73
Fourth quarter,	45 00	23 26	11 50	10 24	1,850 49
<i>Fifth Year.</i>					
First quarter,	\$45 00	\$23 13	\$11 50	\$10 37	\$1,840 12
Second quarter,	45 00	23 00	11 50	10 50	1,829 62
Third quarter,	45 00	22 87	11 50	10 63	1,818 99
Fourth quarter,	45 00	22 74	11 50	10 76	1,808 23

TABLE 1 — *Continued.*

	Amount paid in.	Interest.	Taxes and Insurance.	Paid on Principal.	Principal left unpaid.
<i>Sixth Year.</i>					
First quarter,	\$45 00	\$22 60	\$11 50	\$10 90	\$1,797 33
Second quarter,	45 00	22 47	11 50	11 03	1,786 30
Third quarter,	45 00	22 33	11 50	11 17	1,775 13
Fourth quarter,	45 00	22 19	11 50	11 31	1,763 82
<i>Seventh Year.</i>					
First quarter,	\$45 00	\$22 05	\$11 50	\$11 45	\$1,752 37
Second quarter,	45 00	21 90	11 50	11 60	1,740 77
Third quarter,	45 00	21 76	11 50	11 74	1,729 03
Fourth quarter,	45 00	21 61	11 50	11 89	1,717 14
<i>Eighth Year.</i>					
First quarter,	\$45 00	\$21 46	\$11 50	\$12 04	\$1,705 10
Second quarter,	45 00	21 31	11 50	12 19	1,692 91
Third quarter,	45 00	21 16	11 50	12 34	1,680 57
Fourth quarter,	45 00	21 01	11 50	12 49	1,668 08
<i>Ninth Year.</i>					
First quarter,	\$45 00	\$20 85	\$11 50	\$12 65	\$1,655 43
Second quarter,	45 00	20 69	11 50	12 81	1,642 62
Third quarter,	45 00	20 53	11 50	12 97	1,629 65
Fourth quarter,	45 00	20 37	11 50	13 13	1,616 53
<i>Tenth Year.</i>					
First quarter,	\$45 00	\$20 21	\$11 50	\$13 29	\$1,603 23
Second quarter,	45 00	20 04	11 50	13 46	1,589 77
Third quarter,	45 00	19 87	11 50	13 63	1,576 14
Fourth quarter,	45 00	19 70	11 50	13 80	1,562 34
<i>Eleventh Year.</i>					
First quarter,	\$45 00	\$19 53	\$11 50	\$13 97	\$1,548 37
Second quarter,	45 00	19 35	11 50	14 15	1,534 22
Third quarter,	45 00	19 18	11 50	14 33	1,519 90
Fourth quarter,	45 00	19 00	11 50	14 50	1,505 40
<i>Twelfth Year.</i>					
First quarter,	\$45 00	\$18 81	\$11 50	\$14 69	\$1,490 71
Second quarter,	45 00	18 63	11 50	14 87	1,475 84
Third quarter,	45 00	18 45	11 50	15 05	1,460 79
Fourth quarter,	45 00	18 26	11 50	15 24	1,445 55
<i>Thirteenth Year.</i>					
First quarter,	\$45 00	\$18 07	\$11 50	\$15 43	\$1,430 12
Second quarter,	45 00	17 38	11 50	15 62	1,414 50
Third quarter,	45 00	17 68	11 50	15 82	1,398 68
Fourth quarter,	45 00	17 48	11 50	16 02	1,382 66
<i>Fourteenth Year.</i>					
First quarter,	\$45 00	\$17 28	\$11 50	\$16 22	\$1,366 44
Second quarter,	45 00	17 08	11 50	16 42	1,350 02
Third quarter,	45 00	16 88	11 50	16 62	1,333 40
Fourth quarter,	45 00	16 67	11 50	16 83	1,316 57

TABLE 1 — *Continued.*

	Amount paid in.	Interest.	Taxes and Insurance.	Paid on Principal.	Principal left unpaid.
<i>Fifteenth Year.</i>					
First quarter,	\$45 00	\$16 45	\$11 50	\$17 05	\$1,299 52
Second quarter,	45 00	16 24	11 50	17 26	1,282 26
Third quarter,	45 00	16 03	11 50	17 47	1,264 79
Fourth quarter,	45 00	15 81	11 50	17 69	1,247 10
<i>Sixteenth Year.</i>					
First quarter,	\$45 00	\$15 59	\$11 50	\$17 91	\$1,229 19
Second quarter,	45 00	15 36	11 50	18 14	1,211 05
Third quarter,	45 00	15 14	11 50	18 36	1,192 69
Fourth quarter,	45 00	14 91	11 50	18 59	1,174 10
<i>Seventeenth Year.</i>					
First quarter,	\$45 00	\$14 68	\$11 50	\$18 82	\$1,155 28
Second quarter,	45 00	14 44	11 50	19 06	1,136 22
Third quarter,	45 00	14 20	11 50	19 30	1,116 92
Fourth quarter,	45 00	13 96	11 50	19 54	1,097 38
<i>Eighteenth Year.</i>					
First quarter,	\$45 00	\$13 73	\$11 50	\$19 78	\$1,077 60
Second quarter,	45 00	13 47	11 50	20 03	1,057 57
Third quarter,	45 00	13 22	11 50	20 28	1,037 29
Fourth quarter,	45 00	12 97	11 50	20 53	1,016 76
<i>Nineteenth Year.</i>					
First quarter,	\$45 00	\$12 71	\$11 50	\$20 79	\$995 97
Second quarter,	45 00	12 45	11 50	21 05	974 92
Third quarter,	45 00	12 19	11 50	21 31	953 61
Fourth quarter,	45 00	11 92	11 50	21 58	932 03
<i>Twentieth Year.</i>					
First quarter,	\$45 00	\$11 65	\$11 50	\$21 85	\$910 18
Second quarter,	45 00	11 38	11 50	22 12	888 06
Third quarter,	45 00	11 10	11 50	22 40	865 66
Fourth quarter,	45 00	10 82	11 50	22 68	842 98
<i>Twenty-first Year.</i>					
First quarter,	\$45 00	\$10 54	\$11 50	\$22 96	\$820 02
Second quarter,	45 00	10 25	11 50	23 25	796 77
Third quarter,	45 00	9 96	11 50	23 54	773 23
Fourth quarter,	45 00	9 67	11 50	23 83	749 40
<i>Twenty-second Year.</i>					
First quarter,	\$45 00	\$9 37	\$11 50	\$24 13	\$725 27
Second quarter,	45 00	9 07	11 50	24 43	700 84
Third quarter,	45 00	8 76	11 50	24 74	676 10
Fourth quarter,	45 00	8 45	11 50	25 05	651 05
<i>Twenty-third Year.</i>					
First quarter,	\$45 00	\$8 14	\$11 50	\$25 36	\$625 69
Second quarter,	45 00	7 82	11 50	25 68	600 01
Third quarter,	45 00	7 50	11 50	26 00	574 01
Fourth quarter,	45 00	7 18	11 50	26 32	547 69

TABLE 1 — *Concluded.*

	Amount paid in.	Interest.	Taxes and Insurance.	Paid on Principal.	Principal left unpaid.
<i>Twenty-fourth Year.</i>					
First quarter,	\$45 00	\$6 85	\$11 50	\$26 65	\$321 04
Second quarter,	45 00	6 51	11 50	26 99	494 05
Third quarter,	45 00	6 18	11 50	27 32	466 73
Fourth quarter,	45 00	5 83	11 50	27 67	439 06
<i>Twenty-fifth Year.</i>					
First quarter,	\$45 00	\$5 49	\$11 50	\$28 01	\$411 05
Second quarter,	45 00	5 14	11 50	28 36	383 69
Third quarter,	45 00	4 78	11 50	28 72	353 97
Fourth quarter,	45 00	4 42	11 50	29 08	324 89
<i>Twenty-sixth Year.</i>					
First quarter,	\$45 00	\$4 06	\$11 50	\$29 44	\$295 45
Second quarter,	45 00	3 69	11 50	29 81	265 64
Third quarter,	45 00	3 32	11 50	30 18	235 46
Fourth quarter,	45 00	2 94	11 50	30 56	204 90
<i>Twenty-seventh Year.</i>					
First quarter,	\$45 00	\$3 56	\$11 50	\$30 94	\$173 96
Second quarter,	45 00	2 17	11 50	31 33	142 63
Third quarter,	45 00	1 78	11 50	31 72	110 91
Fourth quarter,	45 00	1 39	11 50	32 11	78 80
<i>Twenty-eighth Year.</i>					
First quarter,	\$45 00	\$0 99	\$11 50	\$32 51	\$46 29
Second quarter,	45 00	58	11 50	32 92	13 37
Third quarter,	—	—	—	—	—

The second table gives the same details for the same sum, \$2,000, payments \$15 per month, the whole amount to be applied on principal and interest, leaving taxes, insurance, water rates and repairs to buyer. In this case the debt is extinguished in sixteen years four months, but the financial burden is much heavier to carry.

TABLE 2. — *Amortization Table showing the Paying Off of \$2,000 (Payments \$15 per Month, Interest 5 Per Cent.).*

	Amount paid in.	Interest.	Paid on Principal.	Principal left unpaid.
<i>First Year.</i>				
First quarter,	\$45 00	\$35 00	\$20 00	\$1,980 00
Second quarter,	45 00	24 75	20 25	1,959 75
Third quarter,	45 00	24 50	20 50	1,939 25
Fourth quarter,	45 00	24 24	20 76	1,918 49
<i>Second Year.</i>				
First quarter,	\$45 00	\$33 98	\$21 02	\$1,897 47
Second quarter,	45 00	23 72	21 28	1,876 19
Third quarter,	45 00	23 45	21 55	1,854 64
Fourth quarter,	45 00	23 18	21 82	1,832 82
<i>Third Year.</i>				
First quarter,	\$45 00	\$32 91	\$22 09	\$1,810 73
Second quarter,	45 00	22 63	22 37	1,788 36
Third quarter,	45 00	22 35	22 65	1,765 71
Fourth quarter,	45 00	22 07	22 93	1,742 78
<i>Fourth Year.</i>				
First quarter,	\$45 00	\$31 78	\$23 22	\$1,719 56
Second quarter,	45 00	21 49	23 51	1,696 05
Third quarter,	45 00	21 20	23 80	1,672 25
Fourth quarter,	45 00	20 90	24 10	1,648 15
<i>Fifth Year.</i>				
First quarter,	\$45 00	\$30 60	\$24 40	\$1,623 75
Second quarter,	45 00	20 30	24 70	1,599 05
Third quarter,	45 00	19 99	25 01	1,574 04
Fourth quarter,	45 00	19 68	25 32	1,548 72
<i>Sixth Year.</i>				
First quarter,	\$45 00	\$19 36	\$25 64	\$1,523 08
Second quarter,	45 00	19 04	25 96	1,497 12
Third quarter,	45 00	18 71	26 29	1,470 83
Fourth quarter,	45 00	18 39	26 61	1,444 22
<i>Seventh Year.</i>				
First quarter,	\$45 00	\$18 05	\$26 95	\$1,417 27
Second quarter,	45 00	17 72	27 28	1,389 99
Third quarter,	45 00	17 37	27 63	1,362 36
Fourth quarter,	45 00	17 03	27 97	1,334 39
<i>Eighth Year.</i>				
First quarter,	\$45 00	\$16 70	\$28 32	\$1,306 07
Second quarter,	45 00	16 33	28 67	1,277 40
Third quarter,	45 00	15 97	29 03	1,248 37
Fourth quarter,	45 00	15 60	29 40	1,218 97
<i>Ninth Year.</i>				
First quarter,	\$45 00	\$15 24	\$29 76	\$1,189 21
Second quarter,	45 00	14 87	30 13	1,159 08
Third quarter,	45 00	14 49	30 51	1,128 57
Fourth quarter,	45 00	14 11	30 89	1,097 68

TABLE 2 — *Concluded.*

	Amount paid in.	Interest.	Paid on Principal.	Principal left unpaid.
<i>Tenth Year.</i>				
First quarter,	\$45 00	\$13 72	\$31 28	\$1,066 40
Second quarter,	45 00	13 33	31 07	1,034 73
Third quarter,	45 00	12 93	32 07	1,002 66
Fourth quarter,	45 00	12 53	32 47	970 19
<i>Eleventh Year.</i>				
First quarter,	\$45 00	\$12 13	\$32 87	\$937 32
Second quarter,	45 00	11 72	33 28	904 04
Third quarter,	45 00	11 30	33 70	870 34
Fourth quarter,	45 00	10 88	34 12	836 22
<i>Twelfth Year.</i>				
First quarter,	\$45 00	\$10 45	\$34 55	\$801 67
Second quarter,	45 00	10 02	34 98	766 69
Third quarter,	45 00	9 58	35 42	731 27
Fourth quarter,	45 00	9 14	35 86	695 41
<i>Thirteenth Year.</i>				
First quarter,	\$45 00	\$8 69	\$36 31	\$659 10
Second quarter,	45 00	8 24	36 76	623 34
Third quarter,	45 00	7 78	37 22	585 12
Fourth quarter,	45 00	7 31	37 69	547 43
<i>Fourteenth Year.</i>				
First quarter,	\$45 00	\$6 84	\$38 16	\$509 27
Second quarter,	45 00	6 37	38 64	470 64
Third quarter,	45 00	5 88	39 12	431 52
Fourth quarter,	45 00	5 39	39 61	391 91
<i>Fifteenth Year.</i>				
First quarter,	\$45 00	\$4 90	\$40 10	\$351 81
Second quarter,	45 00	4 40	40 60	311 21
Third quarter,	45 00	3 89	41 11	270 10
Fourth quarter,	45 00	3 38	41 62	228 48
<i>Sixteenth Year.</i>				
First quarter,	\$45 00	\$2 86	\$42 14	\$186 34
Second quarter,	45 00	2 33	42 67	143 67
Third quarter,	45 00	1 80	43 20	100 47
Fourth quarter,	45 00	1 26	43 74	56 73
<i>Seventeenth Year.</i>				
First quarter,	\$45 00	\$0 79	\$44 21	\$12 52
Second quarter,	—	16	12 68	—

The third table presents the course of amortization for \$2,000, \$16 per month paid, to cover taxes at \$20 per \$1,000, insurance \$6 per year, interest and principal. Buyer takes care of water rates and repairs. The total debt is paid in

twenty-three years two months. If the taxes and insurance were also paid by the purchaser in addition to \$16 per month, the house would be free of debt in fifteen years.

TABLE 3. — *Amortization Table showing the Paying Off of \$2,000 (Payments \$16 per Month, to cover 5 Per Cent. Interest, \$40 Taxes, \$6 Insurance).*

	Amount paid in.	Interest.	Taxes and Insurance.	Paid on Principal.	Principal left unpaid.
<i>First Year.</i>					
First quarter,	\$48 00	\$25 00	\$11 50	\$11 50	\$1,968 50
Second quarter,	48 00	24 86	11 50	11 64	1,976 86
Third quarter,	48 00	24 71	11 50	11 79	1,965 07
Fourth quarter,	48 00	24 56	11 50	11 94	1,953 13
<i>Second Year.</i>					
First quarter,	\$48 00	\$24 41	\$11 50	\$12 09	\$1,941 04
Second quarter,	48 00	24 26	11 50	12 24	1,928 80
Third quarter,	48 00	24 11	11 50	12 39	1,916 41
Fourth quarter,	48 00	23 96	11 50	12 54	1,903 87
<i>Third Year.</i>					
First quarter,	\$48 00	\$23 80	\$11 50	\$12 70	\$1,891 17
Second quarter,	48 00	23 64	11 50	12 86	1,878 31
Third quarter,	48 00	23 48	11 50	13 02	1,865 29
Fourth quarter,	48 00	23 32	11 50	13 18	1,852 11
<i>Fourth Year.</i>					
First quarter,	\$48 00	\$23 15	\$11 50	\$13 35	\$1,838 76
Second quarter,	48 00	22 98	11 50	13 52	1,825 24
Third quarter,	48 00	22 82	11 50	13 68	1,811 56
Fourth quarter,	48 00	22 64	11 50	13 86	1,797 70
<i>Fifth Year.</i>					
First quarter,	\$48 00	\$22 47	\$11 50	\$14 03	\$1,783 67
Second quarter,	48 00	22 30	11 50	14 20	1,769 47
Third quarter,	48 00	22 12	11 50	14 38	1,755 09
Fourth quarter,	48 00	21 94	11 50	14 56	1,740 53
<i>Sixth Year.</i>					
First quarter,	\$48 00	\$21 76	\$11 50	\$14 74	\$1,725 79
Second quarter,	48 00	21 57	11 50	14 93	1,710 86
Third quarter,	48 00	21 39	11 50	15 11	1,695 75
Fourth quarter,	48 00	21 20	11 50	15 30	1,680 45
<i>Seventh Year.</i>					
First quarter,	\$48 00	\$21 01	\$11 50	\$15 49	\$1,664 96
Second quarter,	48 00	20 81	11 50	15 69	1,649 27
Third quarter,	48 00	20 62	11 50	15 88	1,633 39
Fourth quarter,	48 00	20 42	11 50	16 08	1,617 31
<i>Eighth Year.</i>					
First quarter,	\$48 00	\$20 22	\$11 50	\$16 28	\$1,601 03
Second quarter,	48 00	20 01	11 50	16 49	1,584 54
Third quarter,	48 00	19 81	11 50	16 69	1,567 85
Fourth quarter,	48 00	19 60	11 50	16 90	1,550 95

TABLE 3 — *Continued.*

	Amount paid in.	Interest.	Taxes and Insurance.	Paid on Principal.	Principal left unpaid.
<i>Ninth Year.</i>					
First quarter,	\$48 00	\$19 39	\$11 50	\$17 11	\$1,533 84
Second quarter,	48 00	19 17	11 50	17 33	1,516 51
Third quarter,	48 00	18 96	11 50	17 54	1,498 97
Fourth quarter,	48 00	18 73	11 50	17 77	1,481 20
<i>Tenth Year.</i>					
First quarter,	\$48 00	\$18 52	\$11 50	\$17 98	\$1,463 22
Second quarter,	48 00	18 29	11 50	18 21	1,445 01
Third quarter,	48 00	18 06	11 50	18 44	1,426 57
Fourth quarter,	48 00	17 83	11 50	18 67	1,407 90
<i>Eleventh Year.</i>					
First quarter,	\$48 00	\$17 60	\$11 50	\$18 90	\$1,389 00
Second quarter,	48 00	17 36	11 50	19 14	1,369 85
Third quarter,	48 00	17 12	11 50	19 38	1,350 47
Fourth quarter,	48 00	16 88	11 50	19 62	1,330 85
<i>Twelfth Year.</i>					
First quarter,	\$48 00	\$16 64	\$11 50	\$19 86	\$1,310 99
Second quarter,	48 00	16 39	11 50	20 11	1,290 88
Third quarter,	48 00	16 14	11 50	20 36	1,270 53
Fourth quarter,	48 00	15 88	11 50	20 62	1,249 90
<i>Thirteenth Year.</i>					
First quarter,	\$48 00	\$15 62	\$11 50	\$20 88	\$1,229 02
Second quarter,	48 00	15 36	11 50	21 14	1,207 88
Third quarter,	48 00	15 10	11 50	21 40	1,186 48
Fourth quarter,	48 00	14 83	11 50	21 67	1,164 81
<i>Fourteenth Year.</i>					
First quarter,	\$48 00	\$14 56	\$11 50	\$21 94	\$1,142 87
Second quarter,	48 00	14 29	11 50	22 21	1,120 66
Third quarter,	48 00	14 01	11 50	22 49	1,098 17
Fourth quarter,	48 00	13 73	11 50	22 77	1,075 40
<i>Fifteenth Year.</i>					
First quarter,	\$48 00	\$13 44	\$11 50	\$23 06	\$1,052 34
Second quarter,	48 00	13 15	11 50	23 35	1,028 99
Third quarter,	48 00	12 86	11 50	23 64	1,005 35
Fourth quarter,	48 00	12 57	11 50	23 93	981 42
<i>Sixteenth Year.</i>					
First quarter,	\$48 00	\$12 27	\$11 50	\$24 23	\$957 19
Second quarter,	48 00	11 96	11 50	24 54	932 65
Third quarter,	48 00	11 66	11 50	24 84	907 81
Fourth quarter,	48 00	11 35	11 50	25 15	882 66
<i>Seventeenth Year.</i>					
First quarter,	\$48 00	\$11 03	\$11 50	\$25 47	\$857 19
Second quarter,	48 00	10 71	11 50	25 79	831 40
Third quarter,	48 00	10 39	11 50	26 11	805 29
Fourth quarter,	48 00	10 07	11 50	26 43	778 86

TABLE 3 — *Concluded.*

	Amount paid in.	Interest.	Taxes and Insurance.	Paid on Principal.	Principal left unpaid.
<i>Eighteenth Year.</i>					
First quarter,	\$48 00	\$9 74	\$11 50	\$26 76	\$752 10
Second quarter,	48 00	9 40	11 50	27 10	725 00
Third quarter,	48 00	9 06	11 50	27 44	697 56
Fourth quarter,	48 00	8 72	11 50	27 78	669 78
<i>Nineteenth Year.</i>					
First quarter,	\$48 00	\$8 37	\$11 50	\$28 13	\$641 65
Second quarter,	48 00	8 02	11 50	28 48	613 17
Third quarter,	48 00	7 66	11 50	28 84	584 33
Fourth quarter,	48 00	7 30	11 50	29 20	555 13
<i>Twentieth Year.</i>					
First quarter,	\$48 00	\$6 94	\$11 50	\$29 56	\$525 57
Second quarter,	48 00	6 57	11 50	29 93	495 64
Third quarter,	48 00	6 20	11 50	30 30	465 44
Fourth quarter,	48 00	5 82	11 50	30 68	434 66
<i>Twenty-first Year.</i>					
First quarter,	\$48 00	\$5 43	\$11 50	\$31 07	\$403 59
Second quarter,	48 00	5 04	11 50	31 46	372 13
Third quarter,	48 00	4 65	11 50	31 85	340 18
Fourth quarter,	48 00	4 25	11 50	32 25	307 93
<i>Twenty-second Year.</i>					
First quarter,	\$48 00	\$3 85	\$11 50	\$32 65	\$275 28
Second quarter,	48 00	3 44	11 50	33 06	242 22
Third quarter,	48 00	3 03	11 50	33 47	208 75
Fourth quarter,	48 00	2 61	11 50	33 89	174 86
<i>Twenty-third Year.</i>					
First quarter,	\$48 00	\$2 19	\$11 50	\$34 31	\$140 55
Second quarter,	48 00	1 76	11 50	34 74	105 81
Third quarter,	48 00	1 32	11 50	35 18	70 63
Fourth quarter,	48 00	88	11 50	35 62	35 01
<i>Twenty-fourth Year.</i>					
First quarter,	—	\$0 44	\$11 50	\$46 95	—

Description and Development of Tracts selected.

In a previous report¹ this Commission stated briefly some reasons why an experiment in making wholesome homes more available to low-paid workers ought to be conducted in some manufacturing city, aside from Boston, where there are many such workers. Lowell is situated 26 miles from Boston, with frequent and convenient communication both by railroad and

¹ Third annual report, p. 88.

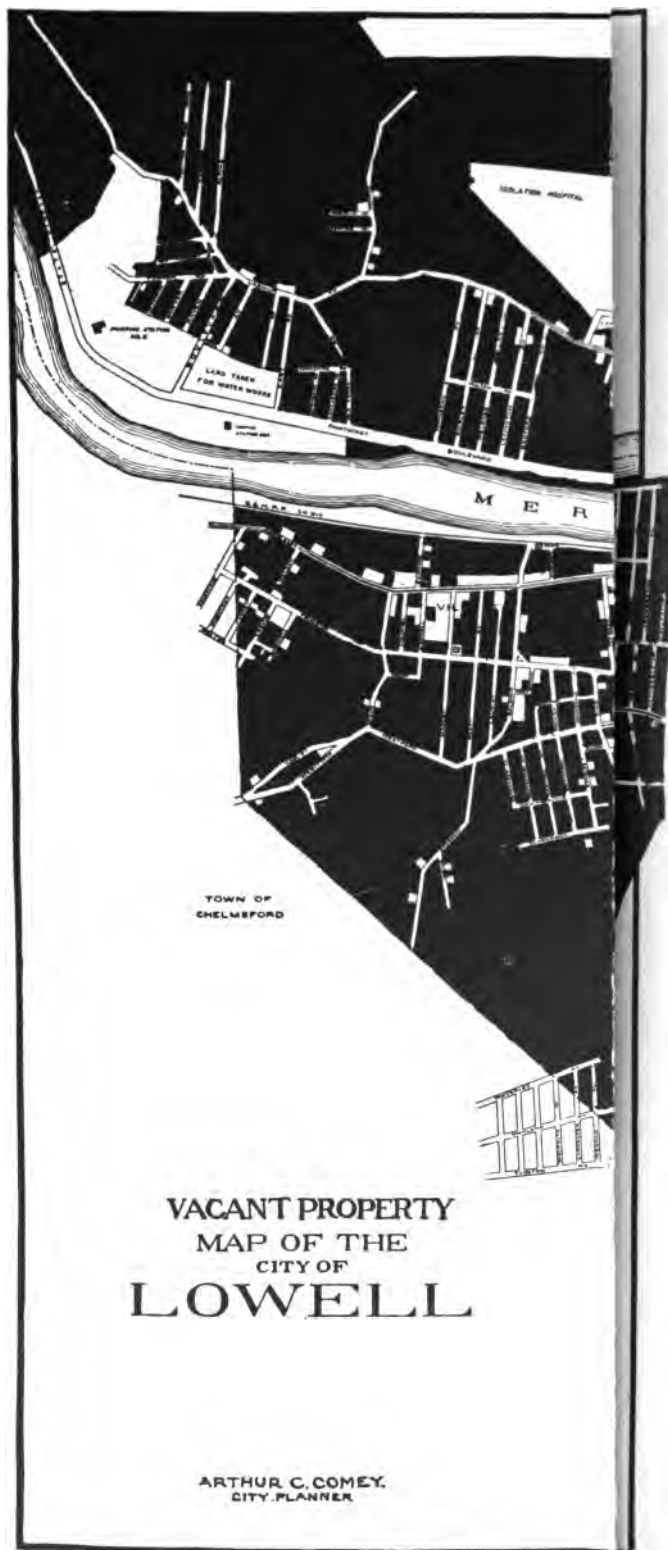
by electric car service. Its population by the 1915 census was 107,987, area 9,098 acres, density of population 11.8 persons per acre. In the manufacturing establishments of Lowell in 1914 there was an average of 29,904 persons employed, with an aggregate pay roll of \$14,001,930, or \$468.23 per worker per year, or \$9 per week. The number of workers and the rates of wages have increased, and the conditions have changed considerably since the beginning of the European war; and with the growing population and higher cost of living, the difficulty of obtaining wholesome homes is rapidly increasing rather than decreasing.

Lowell has not afflicted itself with tenements quite so badly as have some other cities of the Commonwealth, the average number of persons per dwelling being 7.1, as compared with 11.9 in Holyoke, 10.9 in Fall River, 9.7 in Worcester, 9.1 in Boston and Chelsea, 8.4 in New Bedford and 8.2 in Lawrence. Many manufacturing cities have a smaller proportion of single-family houses than Lowell, and a larger proportion of tenements. Unfortunately some of the Lowell houses were built in rows, some single-family houses were crowded too closely together, and many have been allowed to fall into bad repair. Some of the tenements are of surprisingly bad types, overcrowded, insanitary and unclean. Descriptions of conditions in and about them in 1912 are revolting in the extreme.¹ Rents are high but not exorbitant when compared with other cities of similar size and character.

The density of population, 11.8 persons per acre, is low enough to indicate that there are considerable amounts of available unoccupied land within city limits. Herewith is presented a map (H), showing in black, by the last available data, the vacant lands of Lowell.

The central portion of the city south of the Merrimack River is for some distance quite fully covered with buildings, unused lots appearing only occasionally here and there. To the east, west and south of this central portion are seen frequent idle lots, which finally merge into large tracts of unused land. About one-half of the available territory of that part

¹ "The Record of a City," by Geo. F. Kenncott, pp. 57-59; third annual report, Homestead Commission, pp. 34-38.



of the city south of the river is unused. North of the river idle lands predominate, there being only two settlements of any considerable size. There appears to be at least 4,000 acres unused. The asking prices of these vacant lands suitable for building purposes within city limits varies from \$450 to \$5,000 per acre.

The distribution of people throughout the city is of course very uneven. A table showing density of population by wards¹ gives wide variations. Wards 7, 8 and 9 have each less than 5 persons per acre, while Ward 2 houses an average of 61 persons on each acre within its limits. The density of population is much greater in such parts of the city as "The Acre," "Little Canada," some of the foreign quarters and places where block tenements have been built; and this density is further greatly intensified by the large portions of land given up to factories and other industrial and business uses.

Consideration of the foregoing conditions led the Homestead Commission to select Lowell as a suitable place to make detailed plans, in response to the apparent desire of the General Court of 1916 for the actual development of a specified piece of ground. The Commission had no authority and no funds to take options on land, so the prices stated for December, 1916, are in no way binding for any other time; nor has the Commission committed itself or the Commonwealth to any obligation whatsoever.

Three parcels of land were selected for examination and study: one on Parker Street within the city, another at North Billerica in the Billerica Garden Suburb, and a third in Dracut.

¹ *Distribution of Population in Lowell.*

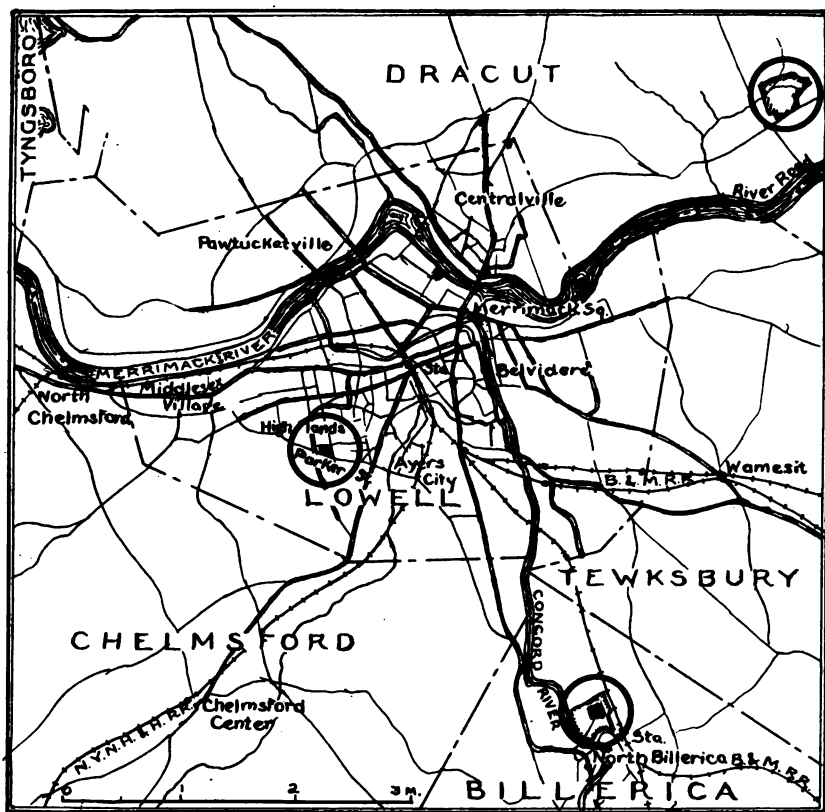
	Acres.	1915 Population.	Number of Persons per Acre.
The city,	9,098	107,978	11.8
Ward 1,	750	9,590	12.7
Ward 2,	224	13,699	61.1
Ward 3,	400	12,387	30.9
Ward 4,	184	9,649	52.4
Ward 5,	165	9,794	59.3
Ward 6,	506	20,697	40.9
Ward 7,	2,423 ¹	10,721	4.4
Ward 8,	2,214	10,803	4.8
Ward 9,	2,232	10,688	4.7

The last two are reached by street cars on a 5-cent fare, twenty to thirty minutes' ride, and short walk. Their location in relation to the central portion of Lowell is shown on the accompanying map.

DESCRIPTION AND DEVELOPMENT OF URBAN (LOWELL) TRACT.

Members of the Commission personally investigated many tracts in Lowell to determine the one most suitable for the urban type of development proposed by the Homestead Commission. Certain of these tracts, though very cheap and within reasonable distances, were either so cut up by previous sales of lots or so far removed from the factory section that they were not deemed to be available. One or two tracts which were reasonable in price and close to the heart of the city were too small for a satisfactory demonstration; for unless a group of dwellings can be built, no special community value can be created.

The tract chosen for detailed plans is intermediate between the small idle plots of the central portion of the city and the larger vacant tracts in the suburbs. It is in the Highlands district, so called, on Parker Street, near the corner of Stevens Street, and runs back to B Street. The Stevens Street car line passes within 400 feet of the property, and gives access directly to the center of the city and many of the mills, by way of the railroad station. Free transfers permit change to other car lines throughout the city. On this line efficient service is maintained with a good type of rolling stock. The nearest school is 1,000 feet to the south, on Wilder Street, and there are churches at but slightly greater distances. One large knitting mill is 1,500 feet northeast. Another group of industries is 1 mile to the north, reached by School or Chelmsford streets. The railroad station is about $1\frac{1}{4}$ miles away, just off Chelmsford Street, and the business center, Merrimack Square, is not quite 2 miles to the northeast. The present type of development in the Highlands is such as to insure the value of the lots being preserved for a long time. At either end of the property numerous houses of distinctly good quality for the better-paid workmen or artisans have been built within the last two or three years. New building work shows



Map showing location in relation to the center of Lowell of 3 tracts (enclosed in circles) considered by the Commission.



J.— View of lot on Parker Street, Lowell, for which development plans were made.

a demand for houses in the locality. The business and residential development has been greatest to the southwest of the city, so the tract lies well within the area in which the workmen are seeking homes. This factor is of particular importance in insuring the success of the urban tract, as however desirable a cheaper tract might be, if it was not in demand by workmen it might be much more slowly taken up. Other lots closer to the heart of the city might have been selected for the same price, but they would have had the disadvantage of smaller area, disagreeable surroundings or low type of improvements. Moreover, the area of this tract is just about the amount that the Commission deemed suitable for a demonstration on urban land. At a density of eight families per acre gross (including half of external streets), about 32 families would be housed. This is felt to be a sufficient number to produce a distinct community type.

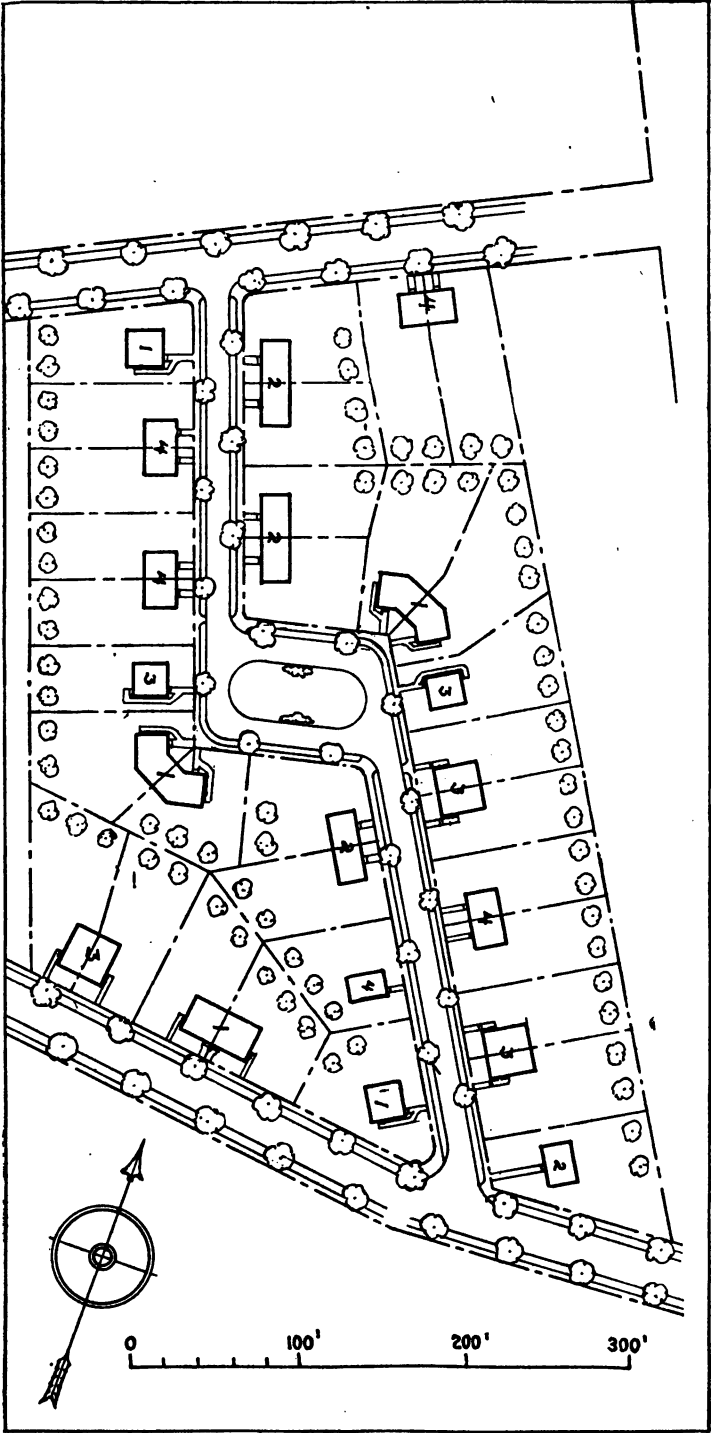
The tract consists of a slightly depressed plateau on the highest portion of the Highlands. North of B Street, Harris Avenue, which begins directly opposite the tract, slopes downward toward the north, and on the other end of the property Parker Street slopes downward to the southeast. Through the center of the property a street will run at a somewhat lower grade than the lots abutting it on either side, and will insure thorough drainage and favorable locations of houses. The drop from B Street to Parker Street is about 5 feet, so that a sewer can readily be constructed leading into the sewer in Parker Street. The fact that the lot has streets on the two short sides only is a distinct advantage for the purposes of the Commission's demonstration, as most of the lots could be made to face on a new street running through the tract. The price at which this property was offered, 5 cents per foot, was considered reasonable for the location.

The tract was evidently formerly an open pasture. A number of bowlders on the ground can be broken up and used for foundation stone, when the area is cleared for building. Aside from this there are a few rotting stumps and some small brush, which can be readily cleared. The property is roughly rectangular with a frontage of 420 feet on Parker Street and 270 feet on B Street. The east boundary of the property is 600 feet long, the west boundary 395 feet.

For any particular piece of land, its peculiar conditions, such as location and price, will prescribe the density of families per acre best suited for it. The more expensive the land the greater the density per acre, although this increase in density does not occur at a correspondingly rapid rate. A density of eight lots per acre gross means lots of approximately 4,600 square feet. On property worth 5 cents a square foot in the rough, lots of 4,600 square feet are about all that can well be afforded in connection with the house. Some variation in size is, however, deemed desirable, so that those who care to maintain a larger garden than the average may do so, while those who do not care to undertake the average size garden may take one smaller. The smallest lots are 40 by 100 feet, 4,000 square feet. The largest lot has 5,500 square feet.

Obviously, the narrower the lot the smaller the cost per lot for street construction and other public improvements. In general, lots 40 to 50 feet front by 100 feet deep appear to give the greatest usefulness and corresponding economy of street improvements. If the lot is less than 40 feet wide the houses are brought so close together as to deprive them of a certain amount of light, air and privacy. In fact, on lots as narrow as 40 feet there is greater privacy to be obtained from the semi-detached or "double" houses than from single houses, inasmuch as there are no windows on the party wall, and the windows in the outer side walls are considerably farther away from other windows facing them. There are, furthermore, a number of economies in the semi-detached house, particularly the saving of one wall, and the greater usefulness of the yard due to the house being located on one side of it instead of in its center.

The Lowell tract was too wide for a single street through the center with lots facing it, as these lots would be too deep. It was therefore necessary to cut up the property with one or more streets in such a way as to prevent this. Furthermore, through traffic crossing such a community as this should be discouraged by at least one break in each street. However, through access is desirable both for the convenience of the dwellers in the community and safety in case of fire or other danger. To meet these conditions the street planned on the



Plan 8.— Lay-out proposed for Parker Street tract.

Arthur C. Conroy.

property at first passes along one side of it at about a distance of 100 feet from the boundary line, then turns across to the other side and continues 100 feet from the other side line. In a tract of this size no large park or playground is practical, but it was felt that a small public open space should be reserved to make the property more attractive and provide a place for the small children. Therefore the street in passing across the property from one side to the other was widened to 85 feet for the short distance of 90 feet, permitting an attractive green to be introduced. Around this little square there are unusually interesting sites for dwellings. Practically all lot lines were made perpendicular to the streets for a distance of 40 feet back, so that wherever semi-detached houses are to be built they may be made parallel to the street.

This interior street, which is to carry relatively little traffic, has been made but 30 feet wide, with a pavement 16 feet wide, sufficient for vehicles going in opposite directions to pass each other easily. This narrow type of pavement is preferable on minor streets to the wide pavements commonly in vogue, and owing to its comparatively small area it can be made of bituminous macadam, a better type than that now generally used in such localities. A 4-foot sidewalk along the property line is wide enough to permit of two persons walking abreast. It leaves room for a strip of grass 3 feet wide between the sidewalk and the pavement, in which width trees can be grown satisfactorily. The houses are set back from the street line a minimum distance of 10 feet, making them at least 50 feet distant from buildings across the street. A few of the houses are placed 15 feet back, to give variety in the street view. No houses except semi-detached houses are built within 10 feet of the lot line, so that nowhere are walls with windows less than 20 feet apart.

After the property is surveyed, properly marked and cleared of stones, stumps, etc., the top soil will be stripped and saved for future use, and the material from house cellars will be used in grading. While the houses themselves are being built sewers and water pipe will be laid. The roadways will then be constructed of bituminous macadam, and sidewalks and house walks built of asphaltic concrete. This material, like that of

the roads, gives a superior type of waterproof surface which quickly dries out after rains and may be kept in as good condition during the winter as in summer. Its cost is less than the cement concrete walks and its texture is less harsh. Along the street young trees will be planted. As the two rows of trees will be but 20 feet apart, the trees in each row should be set to alternate with those of the other row, so that with a space of 60 feet between trees in each row the distance from tree to tree will be 35 feet. Top soil will be replaced over all areas to be planted and grass sown on those areas not to be given over to gardens. In the rear, simple wire fences will prevent through passage. Between the lots no such fences appear to be needed.

There follows a tabulated statement of the estimates of the costs of developing this tract.

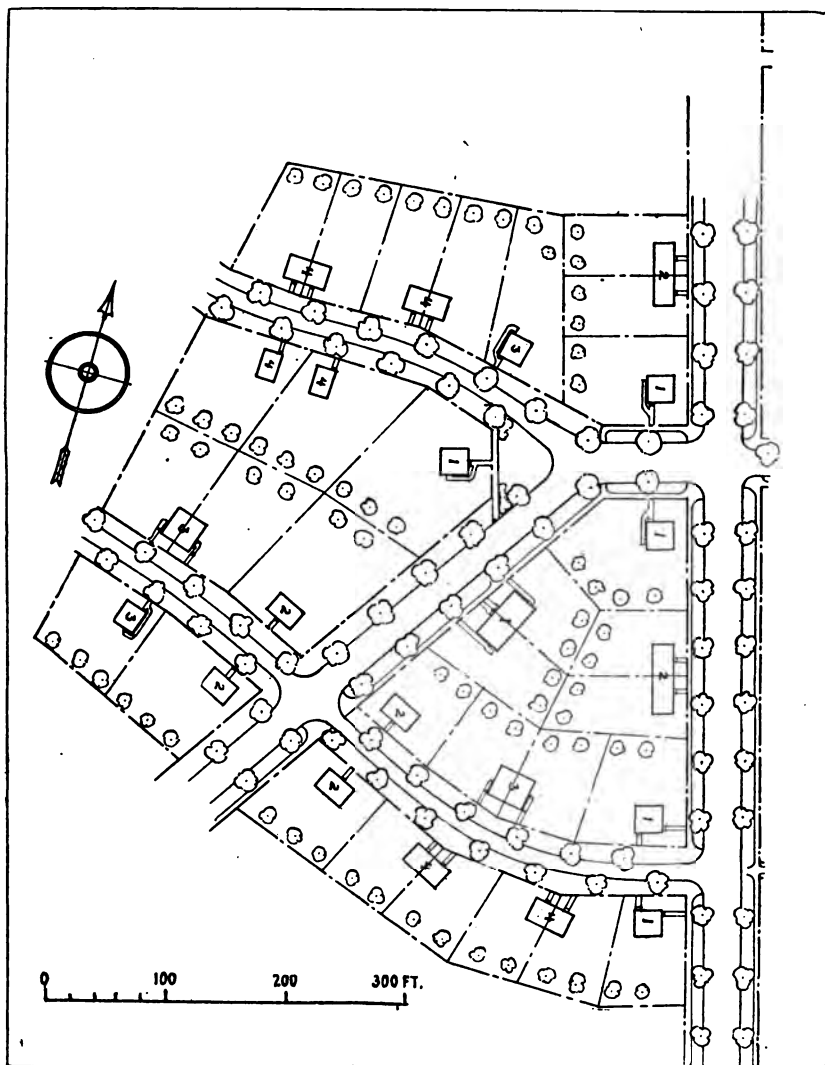
TABLE 4. — *Estimated Costs of Development, Parker Street Tract, Lowell.*

I. Land:—		
1. Total, 3.72 acres at \$2,178 (162,160 square feet at 5 cents),		\$8,108 00
(a) Including one-half external streets, 178,100 sq. ft.		
2. Area in streets, 23,610 square feet, equals 14.6 per cent.		
(a) Including one-half external streets, 37,550 square feet, equals 21.1 per cent.		
3. Area in lots, 138,550 square feet.		
II. Improvements:—		
1. Survey and bounds, 3.72 acres at \$20,	\$74 40	
2. Clearing 3.72 acres at \$40,	148 80	
3. Sewer pipe, 6-inch, 1,209 linear feet at 50 cents,	604 50	
4. Sewer pipe, 8-inch, 410 linear feet at 65 cents,	266 50	
5. Manholes and catch basins, 6 at \$50,	300 00	
6. Drain inlets, 2 at \$15,	30 00	
7. Water pipe, 4-inch, 346 linear feet at 50 cents,	173 00	
8. Roadways, 1,399 square yards at \$1.10,	1,538 90	
9. Curbs, 105 linear feet at 75 cents,	78 75	
10. Sidewalks, 881 square yards at 80 cents,	704 80	
11. House walks, 181 square yards at 80 cents,	144 80	
12. Street trees, 33 at \$1.50,	49 50	
13. Fences (in rear), 1,400 linear feet at 25 cents,	350 00	
14. Grass areas, 14,135 square yards at 3 cents,	424 05	
	<hr/>	
	\$4,888 00	
15. Overhead expense, 15 per cent.,	733 20	
	<hr/>	
Total cost of improvements,		5,621 20
Total per house, \$175.66.		
16. Main water supply — if not by city add \$450.		
III. Houses (estimated), 32 at \$1,650,		52,800 00
	<hr/>	
Total cost,		\$66,529 20

DESCRIPTION AND DEVELOPMENT OF SUBURBAN (BILLERICA) TRACT.

The second tract considered, the suburban type of property, is located in North Billerica, 21 miles from Boston and 6 miles from the center of Lowell, which is reached in twenty minutes on the trolley or in ten minutes by infrequent train service. The large new Boston & Maine Railroad car shops are, however, less than a mile from the tract, and two textile mills are within 1,200 feet of it. The property is almost entirely flat and requires very little grading or clearing. North Billerica railroad station is about 800 feet from the property. A temporary foot bridge, later to be replaced by a permanent road bridge, will lead directly to the village center of North Billerica and the electric cars, one-third of a mile away. At present the distance by road is slightly greater. School, meeting hall and churches are also easily accessible. The property is a portion of the Billerica Garden Suburb now being developed by a limited dividend company with a good quality of workmen's houses, the smallest of which are practically as low in cost as those proposed to be put up by the Commission. The property is already laid out on a comprehensive plan, with main arteries 60 feet wide, one of which, Letchworth Avenue, passes along the site chosen by this Commission. Secondary streets for residential use are only 40 feet wide. The property selected is very roughly rectangular, with a frontage on Letchworth Avenue of 1,310 feet. Back from this run two residential streets and a diagonal secondary thoroughfare. The property's depth from Letchworth Avenue varies from 1,270 to 670 feet. It is 890 feet wide at the back. The total area is 6.42 acres. There is considerable range in size of lots, as more latitude could be given in determining this than in the urban tract. The price at which this tract can be obtained, \$300 per acre, makes the land value per lot very small. Improvements suitable to this suburban type of locality would, however, make the cost of improved lots too great if they are made unduly large. For this reason an average of 5 lots per gross acre was planned. Lots vary from 4,500 to 12,000 square feet in area. The larger lots are given a wider

frontage in proportion to their depth than in the urban tract, as it is felt that at some future time they may possibly be



Plan 9. — Lay-out proposed for Billerica tract.

Arthur C. Comey.

cut into two. Improvements designed for the suburban area are of a distinctly less expensive type than those for the urban tract. Owing to the much greater length of the streets in proportion to the number of lots, an expensive type of pave-

ment is out of the question. With the excellent drainage that the sandy soil provides, a cinder surface road has been found satisfactory. Half the width of the 32-foot Letchworth Avenue roadway will be surfaced along the property. The secondary thoroughfare will have a cinder surface roadway 24 feet wide, and the remaining two streets 16-foot roadways, — enough for local traffic. Along Letchworth Avenue and on one side of the secondary thoroughfare a 4-foot cinder walk will be constructed. On the minor streets the light traffic will not destroy the cinder surface of the roadway so much as to render it unfit for walking, so no sidewalk will be constructed along these streets for the present.

The secondary streets are laid out with long, sweeping curves conforming to the requirements of the area chosen, and, while not inviting through traffic, permit through access and give constantly changing vistas. To save in the cost of surveying, the lot lines are made straight, as the slight difference in area due to this is negligible in low-priced property. Houses, as in the urban tract, are for the most part set 10 feet back from the street, making a minimum distance between house fronts of 60 feet. A greater distance back would make improvements more expensive, and would cut up unnecessarily the space reserved for gardening. As the soil is very pervious, surface drainage will not need to be taken care of at all, and cesspools will be suitable for disposing of the house drainage for the present. To insure convenient and regular cleaning of these cesspools, which is necessary when the houses are connected with a water system, they will be placed in the grass space along the side of the street. Three or four houses can be connected to each cesspool. In both tracts the main water supply will be provided by the municipality under an annual return guarantee. In the estimates, however, a separate figure has been given to facilitate comparison with cases where this is not certain. House walks, which are comparatively short, may be of the relatively expensive tar concrete which is proposed to be used in Lowell. Trees will be placed along the roads, and the grass areas within the street lines made into lawns. The lots themselves, however, will be simply smoothed and left to the care of the occupant.

TABLE 5.—*Estimated Costs of Development, Billerica Tract.*

I. Land:—		
1. Total, 6.42 acres at \$300 (279,600 square feet at .69 cent)	\$1,926 00	
2. Area in streets, 82,700 square feet, equals 29.6 per cent.		
3. Area in lots, 196,900 square feet.		
II. Improvements:—		
1. Survey and bounds, 6.42 acres at \$15,	\$96 30	
2. Clearing 6.42 acres at \$5,	32 10	
3. Sewer pipe, 6-inch, 1,073 linear feet at 35 cents,	375 55	
4. Cesspools, 9 at \$60,	540 00	
5. Water pipe, $\frac{1}{2}$ -inch, 252 linear feet at 40 cents,	100 80	
6. Roadways, 4,221 square yards at 18 cents,	759 78	
7. Sidewalks, 590 square yards at 12 cents,	70 80	
8. House walks, 155 square yards at 80 cents,	124 00	
9. Street trees, 64 at \$1,	64 00	
10. Grass areas, 4,056 square yards at 5 cents,	202 80	
	\$2,366 13	
11. Overhead expense, 15 per cent.,	354 92	
Total cost of improvements,		2,721 05
Total per house, \$80.25.		
12. Main water supply — if not by town, add \$1,000.		
III. Houses (estimated), 31 at \$1,600,		49,600 00
Total cost,		\$54,247 05

DESCRIPTION OF SUBURBAN (DRACUT) TRACT.

For the third tract no plans or estimates were made, as funds were not available. A plan would have been quite expensive and it would show but few features not already covered. The tract lies on the old Lowell and Lawrence road, which up to a few years ago was the main road between these two cities. With the completion of the river boulevard, however, through traffic has almost entirely deserted this road. The distance to the river road and car line is one-half mile by Varnum Avenue, a cross street open to traffic, but as yet unimproved. The tract lies $3\frac{1}{2}$ miles from the center of Lowell and somewhat over 5 miles from Lawrence. A 5-cent car fare takes the passenger to either city. A number of motor busses also operate along the boulevard. At the corner of Varnum Avenue and the boulevard is a small store and a growing community of inexpensive homes. Opposite the tract are two small houses, and at one corner is an old farmstead. North of the tract are a number of farms. The entire property consists of two tracts adjoining each other, with a total area of 210 acres. The tract shown on the location map,

page 49, contains 96 acres, and lies largely on a low hillside sloping to the north. Along the north side of the property runs a small brook with banks in places somewhat marshy, but for the most part flanked by arable land. The hillsides are dry and gravelly. They are generally covered with brush which would need removal at least from considerable portions before the property could be used. The price, \$50 an acre, at which this tract was held, would make it possible to acquire and improve and sell for farming at \$150 an acre. Local estimates of the cost of putting it into hay land were somewhat under this figure.

The plan under which this property could be developed would call for a certain number of main thoroughfares with one or more local centers where ultimately stores, school, etc., could be built. The remainder of the streets would be residential. They would need to be cleared and graded and a narrow cinder surfacing put along the center to insure easy access at all times of the year. It seems likely that the clearing would not need to be extended over the entire area, but might be confined to strips, say, 100 feet back from the roads, which would be from 400 to 500 feet apart. The remainder of each lot could then be cleared by the occupant. This sort of improvement would be very much cheaper than attempting to clear the whole property at the outset. A large number of little farms ranging from a half acre to 5 acres in extent could thus be provided at small cost. If no car service were provided by the street railway company, as soon as a reasonable number of people were living on the tract a motor line could be operated from Lowell through the tract to Lawrence. During the times of light passenger traffic the motor could be used to transport surplus vegetables and supplies. In this way transportation could be satisfactorily taken care of. This rural type of development would be distinctly lower in cost than the suburban type, with larger returns from the gardens.

PLANS AND DESCRIPTION OF THE HOUSES PROPOSED. _____

The houses planned for the tracts at Lowell and North Billerica are similar, as the needs do not vary materially. However, as the lots are necessarily narrower at Lowell, a

greater proportion of semi-detached houses would be built there than in the suburban tract. Herewith are submitted a series of plans for houses within the cost of \$2,000 determined upon by the Commission, designed by the firm of Kilham & Hopkins, architects, and Arthur C. Comey of this Commission. These plans were made after study of the tracts of ground selected in and near Lowell. The specifications call for wooden frame houses with wooden exteriors and fire-resisting roofs. Bids upon more durable forms of construction will also be sought, however, as it is hoped that some such construction may prove to be as cheap as wood; but as wood is at present the standard in Massachusetts for workmen's houses, bids for building in this material were deemed to be at this time the most desirable. Bids were sought in October and November, 1916, when the increase in prices was possibly complete. Builders appeared unwilling to submit figures, especially in the uncertainty regarding prices, unless sure the houses would be erected at once. Only one bidder submitted figures, which ranged from \$1,020 to \$1,694 per house.¹

The type of construction proposed is the same for all the houses, though in practice several methods may actually be used. The floors and walls of the cellar are to be of concrete, chimney of brick. The house is to be of frame covered with wooden shingles on the sides and asphalt shingles on the roof. These, while not absolutely unburnable, are suitable for the conditions in the type of development proposed. They will not catch fire from brands falling upon them from external fires, nor will they be carried by the wind and ignite other houses in case the house burns. Wooden shingles for the walls are but little more expensive than clapboards, and in economy in painting quickly repay the slight extra cost. Ceilings and inside walls are to be plastered with two coats. Floors and inside finish are to be of southern yellow pine.

FOUR TYPES OF HOUSES.

A considerable range in types of houses was felt to be desirable, so as to meet a variety of needs. However, it is believed that no family consisting of parents with children of

¹ For complete bids and specifications see schedule, page 74.

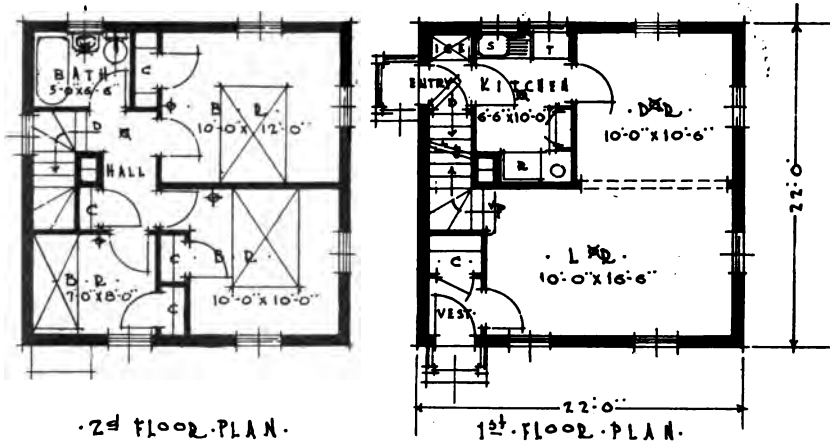
both sexes should have less than three bedrooms, one of which should be quite large, one of medium size and the other, perhaps, small; also a bathroom should be provided. Inasmuch as these requirements demand considerable space, it was felt that none of the houses should have materially greater provision in this respect. The living portion of the house should contain living room and kitchen, but if the door between these rooms is wide, the rooms will be more serviceable and can be made smaller than if they were entirely separate. This provision, however, is not absolutely necessary, and where extreme economy must be practiced a single living room with a kitchen alcove may be the minimum provision. Each house should have a cellar reached through an entry in which there is space for an ice box. Each bedroom should have a closet, and there should be at least one closet near the outside door. In addition to the variation in the space and accommodations provided, the houses may be either detached or semi-detached, according to their location. The semi-detached house saves a certain amount in cost.

To meet this range in provision four types of houses have been designed, each type being shown in both detached and semi-detached, making eight separate plans.

Type 1, detached. — Shown by two plans, Plans 10 and 11. The buildings are 22 and 23 feet square, respectively. The larger of these is the largest and most expensive type of house proposed. One enters from the street through a vestibule into a living room of ample size. Leading out of this through a broad opening is a small dining room sufficient for the usual needs of the family. However, if a longer table should occasionally be desired it can be extended through into the living room for such special occasions. From the dining room double doors, normally open, lead into a small kitchen, designed simply for preparing the food. On one side are range and cabinet for utensils; on the other the sink and work table. The broad doorway, without sills, makes it possible to serve meals with a minimum effort, as the dining-room table is no farther away than a table might be in a large kitchen. It is also easier for the housewife to watch her children in other parts

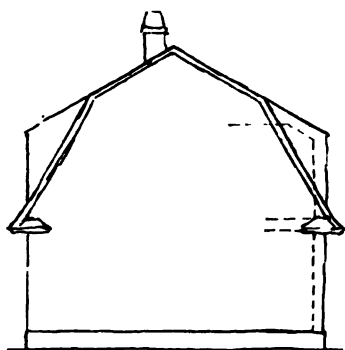


Front Elevation.

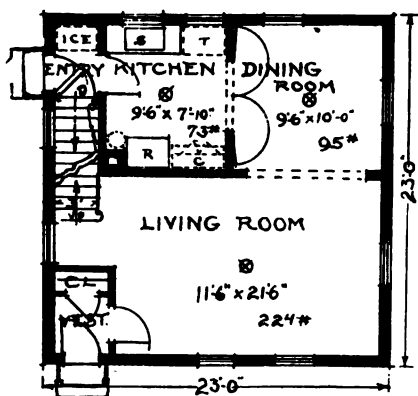


Plan 10. — Type 1, detached.

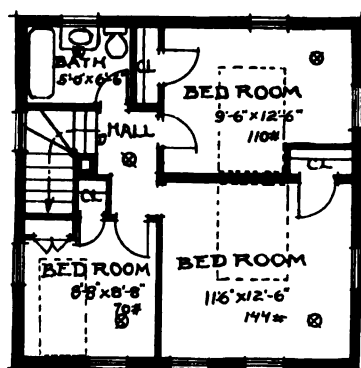
Kilham & Hopkins.



Elevation.



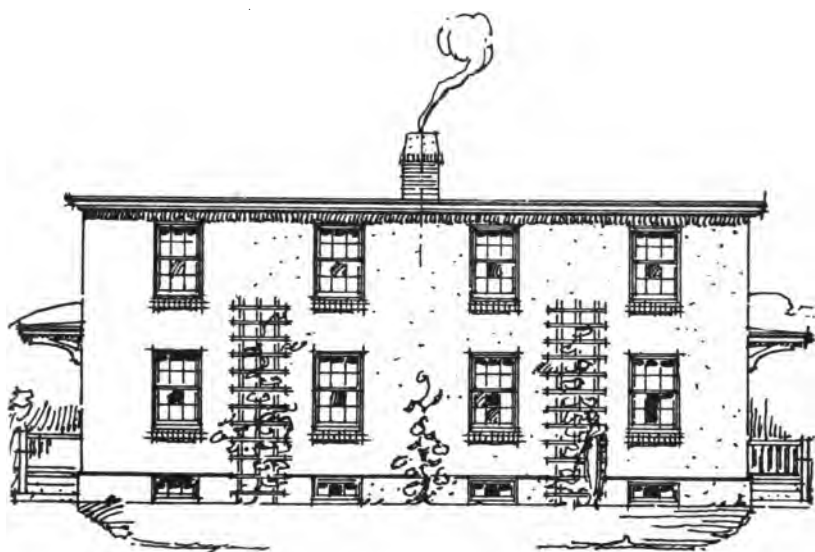
First Floor Plan.



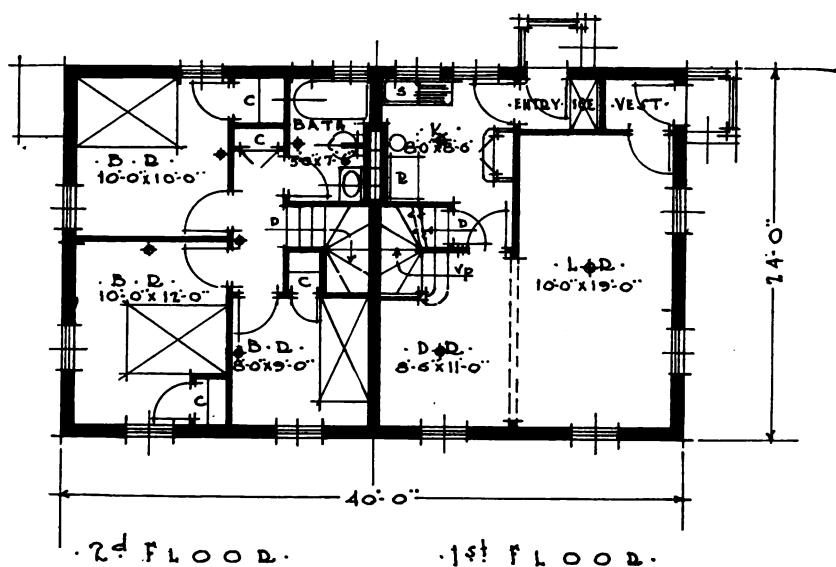
Second Floor Plan.

Plan 11. — Type 1, detached.

Arthur C. Comsy.



• FRONT • ELEVATION •

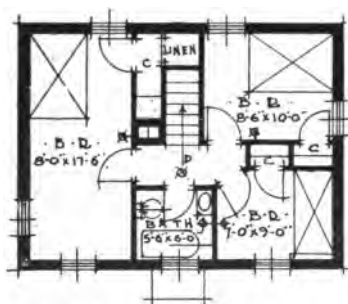


Plan 12. — Type 1, semi-detached.

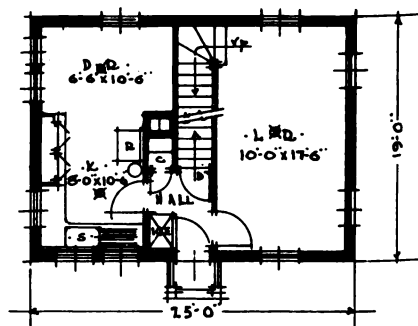
Kilham & Hopkins.



• FRONT • ELEVATION •



2^d FLOOR.



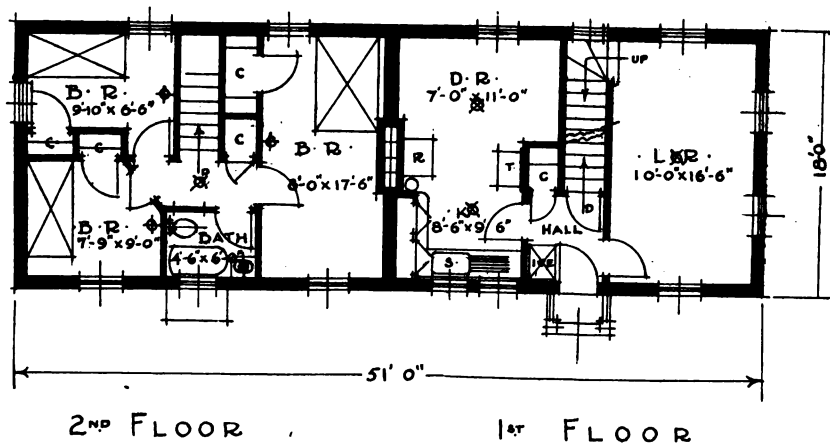
1st FLOOR.

Plan 13. — Type 2, detached.

Kilham & Hopkins.

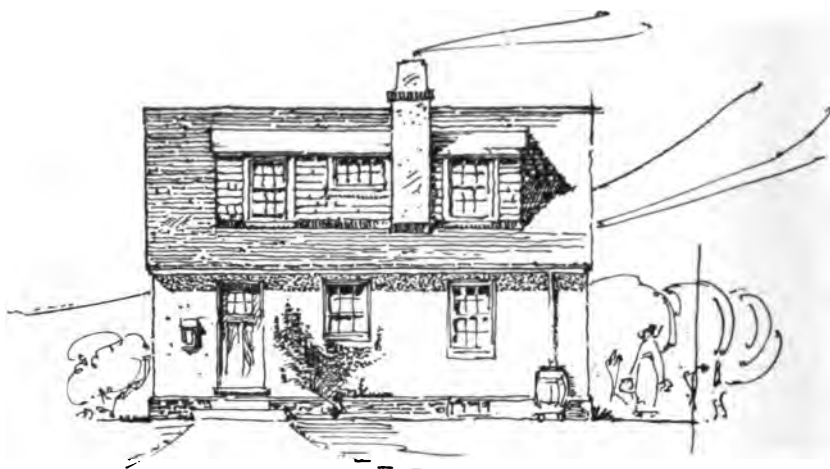


Front Elevation.

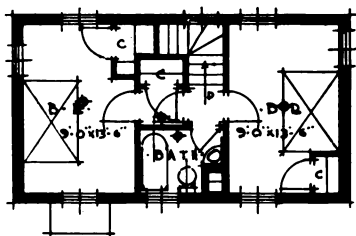


Plan 14. — Type 2, semi-detached.

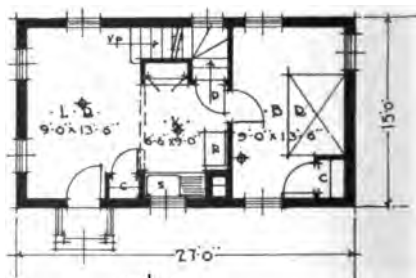
Kilham & Hopkins.



Front Elevation.



2d FLOOR.



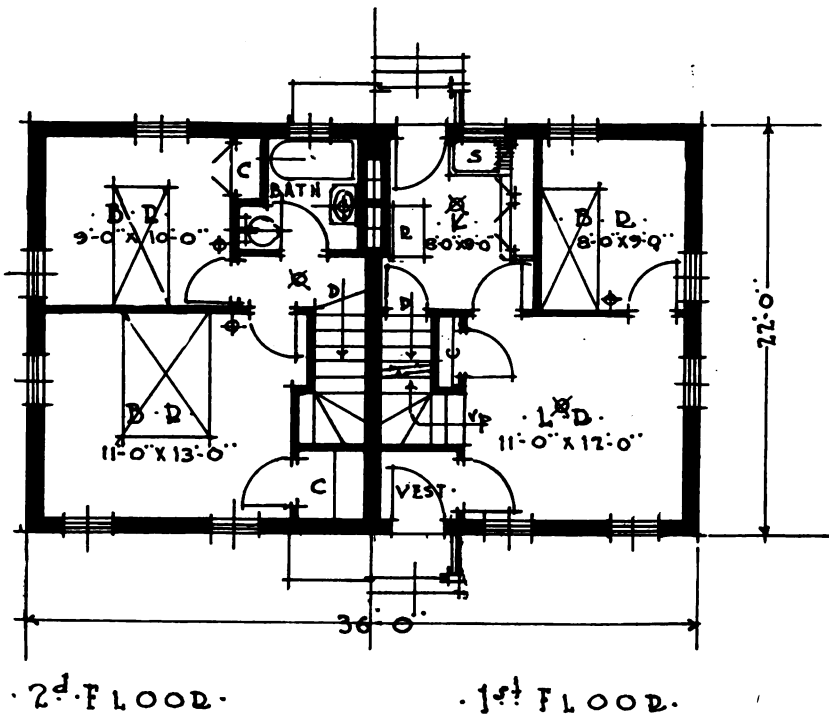
1st FLOOR.

Plan 15. — Type 3, detached.

Kilham & Hopkins. 1



Front Elevation.

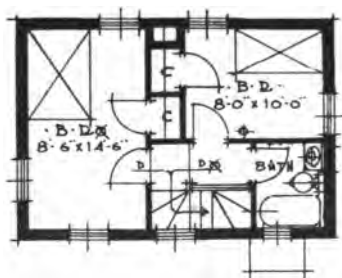


Plan 16. — Type 3, detached.

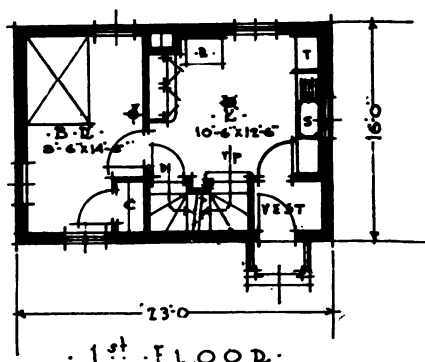
Kilham & Hopkins.



Front Elevation.



2^d FLOOR.



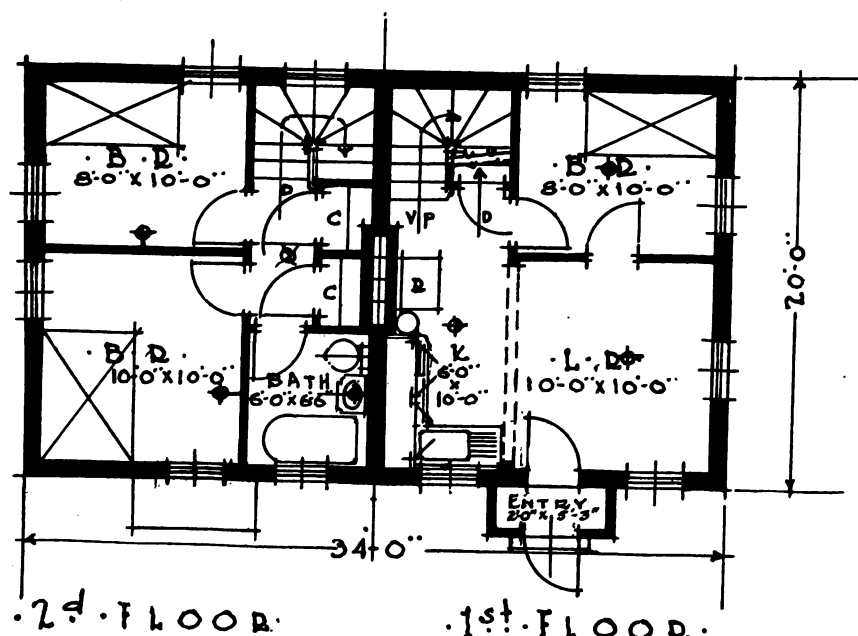
1st FLOOR.

Plan 17. — Type 4, detached.

Kilham & Hopkins.

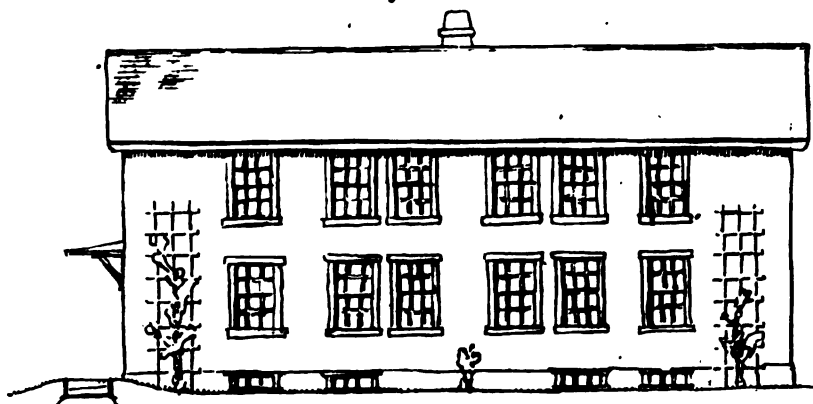


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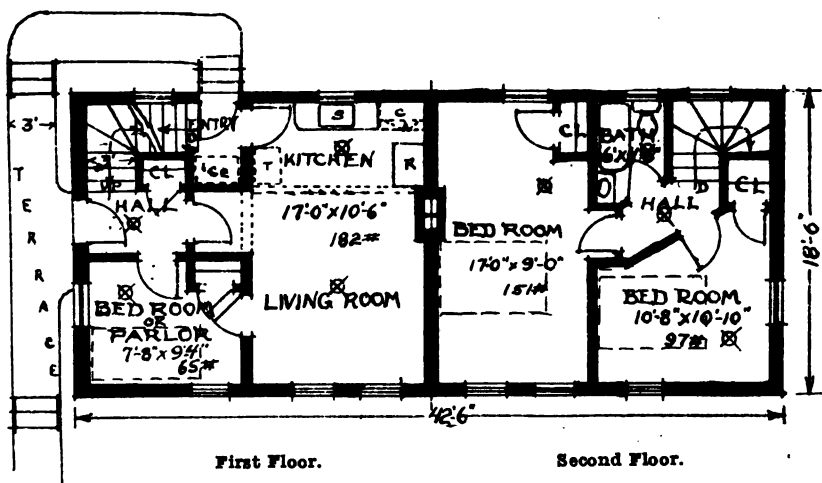


Plan 18. — Type 4, semi-detached.

Kilham & Hopkins.



Front Elevation.



Plan 19. — Type 4, semi-detached.

Arthur C. Comey.

of the house. Directly beyond the kitchen is the entry with ice box and outside door. Leading from it are the stairs to the cellar, which are underneath the stairs from the living room leading to the second floor. Upstairs is a hall large enough to afford access to the three bedrooms and bath. The large bedroom is suitable for parents and small child, the medium-sized bedroom for two children of the same sex, and the third, smallest bedroom, for a third child or dependent. Each bedroom has a closet of ample proportions. The bathroom has room for tub, washbowl and seat. The washbowl will not, however, be provided in the beginning, as each fixture adds expense, and many families will ordinarily use the kitchen sink for washing. The house is electrically lighted throughout, with nine ceiling outlets in such positions that the lamp pulls may easily be reached without the extra expense of wall switches, except that a switch at the head of the stairs is provided for lighting the cellar light.

Type 1, semi-detached, shown by Plan 12, is an adaptation of Plan 10 to the requirements of the double house.

In Type 2 the size of the house is slightly reduced and the dining room and kitchen thrown more together as a single large room, with the cooking portion at one end.

In Type 3 the dining room is omitted with the intention of one end of the living room being used for this purpose. Space is provided down stairs for a bedroom or parlor.

Type 4 represents the smallest of these houses. Two plans of the same type are submitted. In the dwelling which is shown with a terrace on one side several advantageous arrangements have been made in this small space. Placing the excavation from cellar along the side of the house makes the walk at this point usable as a terrace, in place of a porch, which has been thought too expensive a feature to provide in any of the houses, though it might well be added by the owner later. Entering directly from the terrace through a short hall, one comes into the living room, which stretches across the house with light and air on both front and back. A beam divides the kitchen space to a certain extent from the

remainder of the room. From this portion a door leads into an entry with space for ice box, back outside door and steps to the cellar. Opposite the stairs to the second floor and accessible from the living room or from the hall is a small room which may be used either as a parlor or as a bedroom, according to the size of the family. Upstairs there are two bedrooms and bathroom. One bedroom is quite large, suitable for the parents and one or more small children. It is believed that this represents the smallest space within which a typical American family can be properly housed.

MEMORANDUM AND SPECIFICATIONS.

The architects' memorandum and specification for all types submitted by Kilham & Hopkins with their plans are as follows:—

(a) *Location.* — Within 5 miles of the center of Lowell, on electric car line; $\frac{1}{2}$ mile to freight station (see location map, page 49).

(b) *Public Service.* — Obtain and pay for permits for water and electric light service, etc., and connect with same at a point not over 30' from front wall of house.

(c) *Preparation of Lot.* — No grading, blasting, removal of trees or other natural objects is included.

(d) *Excavation.* — Excavation is in coarse sand and gravel, which may be used in the work. Do all excavating, and later fill in around walls and piers, and use extra material in grading up around house as directed.

(e) *Concrete Work.* — Erect suitable forms and pour cellar walls of 1, 3 and 6 concrete, well tamped. Walls must be not less than 10" thick. Later, smooth off bottom of cellar, roll and lay 3" floor of concrete 1, 3 and 6, with surface of 1 to 2 floated smooth. When frame is up, fill voids between ends of floor joists and between girders and floor above with concrete grout, or brick laid in mortar.

(f) *Brick or Tile Work.* — Build chimney of brick, 4" walls with tile flue lining, or of 4" terra cotta blocks; masonry to be laid up with mortar, 1 part P. C., 1 part lime and 6 parts sand. Finish above roof with 8" brick walls or 4" tile, with smooth, glazed surface, and joints carefully pointed. Top to be protected with heavy wash of cement, 1 to 2, with strip of galvanized Clinton wire. Build in 4-pound lead counter flashing at roof. Put in 4" tile drain from conductors to dry well, including tile to receive foot of wooden conductor. Build dry well 4' deep and 4' square. Connect to plumbers 4" C. I. soil, with 4" akron pipe to cesspool. Build cesspool 15' from house wall, 4' in diameter, and 8' deep below grade.

Give alternate figure for connecting with street sewer, 40' from front wall of house.

(g) *Frame.* — To be of sound spruce or hemlock, well seasoned, and free

from bark and large or loose knots, and full dimensions throughout. Sill, 4" x 6"; studs, outside walls, 2" x 4", 16" O. C.; partitions, 2" x 3", 16" O. C.; joists, 2" x 7", 16" O. C., bridged once where spans exceed 8'. Rafters for flat roofs, 2" x 7", 20" O. C.; for pitched roofs, 2" x 5", 24" O. C. Plate, 3" x 4".

(h) *Rough Boarding*. — Cover floor timbers of first floor with $\frac{1}{4}$ " spruce or hemlock boards. On these lay heavy rosin-sized paper. Cover outside walls and roof with similar boarding.

(i) *Shingles*. — Cover outside wall boarding with good quality cedar or redwood shingles, laid 6 $\frac{1}{2}$ " to the weather, in every case breaking joints. Adjust courses to fit sills and heads of windows. Cover pitched roofs and tops and sides of dormers with Reynolds or Equal asphalt shingle, with green slate chip surface, valleys of same material. Shingles to be laid with 2 $\frac{1}{2}$ " head cover. Flash at chimney with 4-pound lead, and turn down lead counter flashing over same. Flash around vent pipe with same material.

(j) *Windows, Double Hung*. — Stock sizes, divided by muntins as shown, 1 $\frac{3}{8}$ " white pine sash, hung on Samson spot cord, balanced with C. I. weights, on steel axle pulleys. Glass D. T. cylinder set with putty. Frames stock, white pine.

(k) *Outside Finish*. — Outside finish: stock, cypress gutters, on one side only for flat roofs, cypress conductors, moulding at water table and at eaves, cypress, stock pattern. The window boxes, trellises and other detachable features are not included in the contracts.

(l) *Plasters*. — Walls and ceilings of first and second floors to be lathed with clear spruce lath, breaking joints every 7 courses, and covered with lime and hair mortar, two coats. Lime is to be slacked two weeks in advance of use, after thorough sifting. Finish with smooth float. All exterior angles to have wood or metal corner beads.

(m) *Inside Finish*. — This will be southern yellow pine, 4" x $\frac{3}{4}$ " base, with $\frac{1}{4}$ " round on top; plain 4" x $\frac{7}{8}$ " door trim, lintel head; $\frac{7}{8}$ " window stool with apron piece under, and stock 1 $\frac{3}{4}$ " picture moulding in all rooms. Balusters 1" round, 2 to a tread. Posts 4 x 4, with 1 $\frac{1}{2}$ " block cap, all yellow pine.

(n) *Floors*. — Southern yellow pine, 3 $\frac{1}{2}$ " face, clear matched $\frac{3}{8}$ " stock, laid tight over under floor of first story, and directly on joists of second. Treads and risers, same material.

(o) *Doors*. — Stock fir, 1 $\frac{3}{8}$ " thick; inside doors generally 2' 8" x 6' 6"; smaller where necessary. Frames out of 1 $\frac{1}{2}$ " stock, rebated. Outside frame 1 $\frac{3}{4}$ " thick, double rebated, of white pine.

(p) *Fittings*. — Sinks to have grooved yellow pine drain boards, closets, 12" shelf with hook strip under. Kitchen to have 3 shelves, where indicated, on wide cleats.

(q) *Hardware*. — Outside door, 1 pair brass butts, 3-lever rim lock, brass knob, heavy rim bolt. Inside doors, 2 knob rim latch set; 1 pair steel butts, to paint; windows C. I. fast; closets, cast steel hooks, 6 to a closet.

(r) *Paint.* — Exterior woodwork, except shingles, to be treated with one heavy coat of oil stain; outside door, both sides, and outside of all sash to have 3 coats lead and oil paint.

Inside finish to be oiled, 2 coats raw linseed, rubbed down after each coat. Plaster walls to have 2 coats lead and oil and 1 coat enamel. Floors, 2 coats raw linseed, rubbed dry. Doors, stained with oil stain, and shellac to 1 coat; butts painted. All exposed plumbing pipes in first and second stories painted 3 coats like walls.

(s) *Plumbing.* — Conductors to have 2" lead gooseneck. Waste system of C. I. to 6' outside cellar wall; wastes from sinks to bowls, 2", from water-closets, 4"; joints calked with oakum and filled with lead. All pipe exposed. Vents size of wastes, through roof, or into chimney flue where this is nearer.

Supplies to be brought from street, $\frac{1}{2}$ " to house, $\frac{1}{4}$ " to fixtures.

Fixtures: Water-closet, wash down pattern, heavy earthenware, with joint between earthenware and iron, above floor. High tank finished like trim.

Lavatory: Enameled iron, 16" x 20", with hot and cold water, brass compression cocks, plug and chain; $\frac{1}{4}$ S trap.

Sink: Slate, 18" x 30", with brass strainer, and C. I. grease trap, hot and cold water faucets.

Bath tub: Enameled iron 4' long, hot and cold water faucets, plug and chain, and trap.

Hot water: Connect with range, $\frac{1}{2}$ " supply with $\frac{1}{4}$ " branches to fixtures; 30-gallon galvanized iron hot-water boiler and standard.

Plumbing to be tested with water test and made perfectly tight.

(t) *Wiring.* — Connect with public service at wall of building and wire for and install lights according to underwriter's rules. System to be porcelain knob and tube; plain spun brass fixtures of smallest and simplest type.

BIDS FOR CONSTRUCTION.

We hereby agree to build houses as per specifications and plans submitted:—

Type 1, detached, 22' x 22',	\$1,694 00
Type 1, semi-detached, 40' x 24',	3,110 00
Type 2, detached, 25' x 19',	1,662 00
Type 2, semi-detached, 51' x 18',	3,163 00
Type 3, detached, 27' x 15',	1,417 00
Type 3, semi-detached, 36' x 22',	2,675 00
Type 4, detached, 23' x 16',	1,310 00
Type 4, semi-detached, 34' x 20',	2,040 00

BILLERICA GARDEN SUBURB, INC.,
C. H. WILLIAMS,
Treasurer.

NORTH BILLERICA, MASS., Oct. 12, 1916.

The Bill recommended.

Attention is recalled to the opening paragraph of this report. The intervening pages present, with much detail, plans for the development of projects along the lines set forth by the advocates of homestead legislation and stated in the act creating the Commission. These plans are embodied in this report as a direct response to the apparent desire of the General Court. They are intended to be a statement, as nearly accurate as statements regarding future events may be, of the general policy and course of action, and the things the Commission would do in case the appropriation asked for is made. While the plans set forth may not be entirely beyond criticism, it is believed that they are feasible and practical, and can without great difficulty be worked out within the limitations stated in the report, excepting that the actual cost for which a house can be constructed is at all times uncertain, more so at the present time than usual. If the conclusion of the Commission is correct that \$15 per month, or \$2,000 for purchase price, is the utmost that the people sought to be helped can afford to pay for shelter, then with advancing prices possibly what now seem to be the minimum requirements for a wholesome home would need to be still further reduced in order to come within those figures. Whether such reduction is possible the Commission does not here discuss, and hopes are entertained that its consideration will never be necessary.

The Commission repeats that it is not recommending that the Commonwealth enter the real estate business for the purpose of supplying wholesome homes for low-paid workers, no matter how great the social or individual need may be. It only recommends an appropriation for a single experiment, or demonstration, to learn whether it is financially possible to supply such homes for such workers, what are the principles or policies upon which such an undertaking should proceed, what are the dangers and what should be the limitations. The recommendation is embodied in the following bill: —

AN ACT TO AUTHORIZE THE HOMESTEAD COMMISSION TO PROVIDE HOMESTEADS FOR CITIZENS.

SECTION 1. The homestead commission is hereby authorized, by and with the consent of the governor and council, to take or purchase, in behalf of and in the name of the commonwealth, a tract or tracts of land, for the purpose of providing homesteads, or small houses and plots of ground, for mechanics, laborers, wage earners, or others, citizens of this commonwealth; and may hold, improve, subdivide, build upon, sell, repurchase, manage and care for said tract or tracts and the buildings constructed thereon, in accordance with such terms and conditions as may be determined upon by the commission.

SECTION 2. The commission may sell said tract or tracts or any portions thereof, with or without buildings thereon, for cash, or upon such installments, terms and contracts, and subject to such restrictions and conditions, as may be determined upon by the homestead commission; but no tract of land shall be sold for less than its cost, including the cost of any buildings thereon. All proceeds from the sale of land and buildings or other source shall be paid into the treasury of the commonwealth.

SECTION 3. The homestead commission is hereby authorized to expend not to exceed one hundred thousand dollars for the purposes of this act.

SECTION 4. This act shall take effect upon its passage.

Measures previously recommended by the Commission.

Two measures of vital and far-reaching importance recommended by the Homestead Commission have been enacted into law, — city planning¹ and authorizing cities to teach agriculture.² In the three years that have elapsed since the recommendation of this Commission was approved by the General Court, the proposition that communities should grow by plan and not by chance has been pretty generally accepted, its progress in the public mind has been rapid, but concrete results in the control and regulation of urban development are not yet large. There are now forty-nine local planning boards in the Commonwealth, and the plans, studies and recommendations made by many of them show a public-spirited zeal and ability that will surely prove to be of great benefit to their communities. The fourth annual conference of the boards, at Springfield, Nov. 23 and 24, 1916, was well attended, interesting and instructive. The Homestead Commission expects soon to print a full account of the proceedings.

Authority for the school boards to teach agriculture was accepted by large majorities in each of the cities of the State.

A measure to establish residential districts³ was rejected, as were also two measures to render city planning effective.⁴

A bill drawn by a commission appointed on the recommendation of the Homestead Commission, to provide a more workable and equitable system for the assessment of betterments when public improvements are made, is still pending.

¹ Chapters 494 and 595, 1913.

² Chapter 185, 1916.

³ House 122, 1914.

⁴ House 121, 1914; House 636, 1915.

